

**APPENDIX 2.8-1**  
*Noise Technical Report*



**Acoustical Analysis Report for  
Otay Ranch Village I4 and Planning Areas I6/I9**

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## GLOSSARY OF TERMS AND ACRONYMS

Term	Definition
ADT	Average Daily Traffic Volume
AMSL	above mean sea level
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
CNEL	Community Noise Equivalent Level - CNEL is the average equivalent A-weighted sound level during a 24-hour day and it is calculated by adding 5 dB to sound levels in the evening (7 p.m. to 10 p.m.) and adding 10 dB to sound levels in the night (10 p.m. to 7 a.m.).
dB	Decibel - A unit for measuring sound pressure level and is equal to 10 times the logarithm to the base 10 of the ratio of the measured sound pressure squared to a reference pressure, which is 20 micropascals.
dBA	A-weighted decibel
EPA	Environmental Protection Agency
L <sub>den</sub>	Day/Evening/Night Noise Equivalent Level – same as CNEL
L <sub>eq</sub>	Equivalent continuous sound level
L <sub>max</sub>	Maximum sound level during the measurement interval
L <sub>eq(h)</sub>	Hourly Equivalent Noise Level - The sound level corresponding to a steady state sound level containing the same total energy as a time varying signal over an hour period.
mph	miles per hour – average vehicle travel speed
NSLUs	Noise Sensitive Land Uses
MSCP	Multiple Species Conservation Program
OWD	Otay Water District
PPP	private pocket park
SDCWA	San Diego County Water Authority
SR	State Route
SRP	Subregional Plan
TNM	Federal Highway Administration Traffic Noise Model - TNM 2.5
MWD	Metropolitan Water District
USFWS	U.S. Fish and Wildlife Service

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## SUMMARY

Dudek has prepared this noise study for the proposed Otay Ranch Village 14 and Planning Areas 16/19 (Proposed Project) to evaluate exterior noise impacts associated with traffic along Proctor Valley Road and roadways predicted to experience potentially significant increases in traffic volumes as a result of the Proposed Project (San Miguel Ranch Road, Mount Miguel Road, Hunte Parkway, Lane Avenue, Northwoods Drive, and Melody Road). Proposed Project on-site operational noise, construction noise, and vibration (including blasting and rock-crushing activities) are also evaluated.

The primary existing noise source within the Project Area is vehicular traffic from Proctor Valley Road. Proctor Valley Road is currently a two-lane, unimproved, dirt roadway with an average daily traffic volume (ADT) of approximately 200 ADT within the Project Area (defined as follows). By the year 2030, the traffic volume along Proctor Valley Road within the Project Area (south of driveway no. 1) is projected to be up to 17,900 ADT without the Proposed Project and 29,400 ADT with the Proposed Project with full GDP/SRP Build-Out.<sup>1</sup> No other noise sources potentially affecting the Proposed Project have been identified.

The future traffic noise is anticipated to exceed the County of San Diego (County) noise standard of 60 decibels (dB) Community Noise Equivalent Level (CNEL) at the outdoor living areas of single-family lots adjacent to Proctor Valley Road without mitigation. With mitigation in the form of 6-foot-high noise barriers, traffic noise levels are reduced to below the County's 60 dB CNEL exterior noise criterion. Without implementation of noise mitigation measures, noise levels would exceed 60 dB CNEL at the second-floor level of the single-family residential lots directly adjacent to Proctor Valley Road, thus exceeding the County's 45 dB CNEL interior noise criterion. Prior to issuance of building permits, an interior noise study will be required for residential units adjacent to Proctor Valley Road to ensure that the interior CNEL will not exceed 45 dB. The residences would most likely require air-conditioning and/or mechanical ventilation (i.e., heating, ventilation and air conditioning (HVAC)) systems to meet the County's interior noise standard. Sound-rated windows may also be required.

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<sup>1</sup> Year 2030 Cumulative Conditions with full GDP/SRP build-out traffic conditions assume that all of the additional dwelling units allowed under the approved Otay Ranch GDP/SRP, in the areas not included within the site of the Proposed Project, would be developed. This is a theoretical, highly unlikely scenario as the site of a majority of the additional dwelling units that would be developed under this scenario is located in Village 14 and Planning Area 16 on state property (Rancho Jamul Preserve). Accordingly, it is highly unlikely that these additional units would ever be developed. However, as a conservative measure, and to be consistent with the project's worst-case traffic analysis (Chen Ryan Associates 2017), these traffic conditions are analyzed at proposed on-site noise-sensitive land uses. For off-site noise-sensitive receivers, the traffic volumes for the Year 2030 Cumulative Conditions are used.

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Noise from on-site operational activities is considered a potentially significant impact. The Proposed Project's operational noise sources would include air-conditioning units at each of the residential land uses. The impact of noise from HVAC equipment or other noise-generating on-site equipment under the Proposed Project is considered a potentially significant impact. Mitigation measures are provided (i.e., preparation of an acoustical study or studies of the proposed stationary noise sources ensuring compliance with applicable standards prior to the issuance of building permits) to reduce potential impacts to a level below significance.

Noise from on-site rock drilling, blasting, and rock crushing activities associated with Proposed Project construction is considered potentially significant, and mitigation measures to reduce potential effects to a level below significance are provided in this report. Construction noise, associated with improvement of Proctor Valley Road and on-site construction activities, would result in potentially significant impacts at adjacent, occupied residences. Mitigation measures in the form of the requirement for preparation and implementation of a blasting and monitoring plan and the requirement of minimum setbacks to reduce these potential effects to a level below significance are provided in this report.

Construction activities would result in vibration anticipated to exceed the level of human perception at existing off-site noise/vibration sensitive land uses; the potential vibration impacts to these residential structures are considered potentially significant. Because the development of the Proposed Project would be a multi-year endeavor, portions of the development would be completed and occupied during the construction of subsequent portions (phases). Vibration from construction activities, if they occur within 200 feet of on-site residences, has the potential to result in vibration levels considered potentially significant. Mitigation measures in the form of the requirement for preparation and implementation of a vibration-monitoring program are provided to ensure that potential effects are reduced to a level below significance.

# **Acoustical Analysis Report for Otay Ranch Village 14 and Planning Areas 16/19**

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## **1 INTRODUCTION**

Dudek has prepared this noise study for the Otay Ranch Village 14 and Planning Areas 16/19 (Proposed Project), evaluating exterior noise impacts associated with Proposed Project–related traffic on Proctor Valley Road and other arterial roadways in the Project Area, as well as construction and on-site operational noise and vibration.

This analysis is based on the Proposed Project’s Tentative Parcel Map (TM 5616). Field noise measurement data are included in Appendix A, and sound modeling application input/output data are included in Appendix B.

### **1.1 Proposed Project Location and Description**

#### **Overview and Background**

The Proposed Project is part of the overall Otay Ranch, an approximately 23,000-acre master-planned community in southern San Diego County (County) designed as a series of villages and planning areas. The Proposed Project addressed by this technical report is located within a portion of Otay Ranch Village 14 and Planning Areas 16/19 in the Proctor Valley area of Otay Ranch, as shown in Figure 1, Regional Map; Figure 2, Project Location Map; and Figure 3, Proctor Valley Site Utilization Plan.

The purpose of the Proposed Project is to implement the adopted Otay Ranch General Development Plan/Subregional Plan, Volume II (County of San Diego 1993) (Otay Ranch GDP/SRP) and complete the planned development within Jackson Pendo Development Company’s (applicant) ownership of Village 14 and Planning Areas 16/19. The Otay Ranch GDP/SRP is a component part of the County General Plan (County of San Diego 2011a) and allows for a total of 2,123 homes in Otay Ranch Village 14 and Planning Areas 16/19. The Proposed Project’s 1,119 homes represent a portion of the total 2,123 homes originally authorized in the Otay Ranch GDP/SRP.

The Proposed Project is designed to be consistent with the Otay Ranch GDP/SRP’s Village Character Policy “to serve as a transitional area between urban densities to the west and Jamul to the east”. The Proposed Project is therefore designed to provide a transitional village between the densities and character of eastern Chula Vista and the more rural community of Jamul. The Proposed Project proposes 1,119<sup>2</sup> homes, of which 994 are in Village 14 and 125 homes in Planning Areas 16/19 as shown in Table 1, Village 14 and Planning Areas 16/19 Site Utilization Plan Summary.

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<sup>2</sup> Includes 97 residential units allocated to school site at 10 dwelling units per acre per Otay Ranch GDP/SRP policies in the event the school is not constructed. This technical report evaluates the impact assuming the more conservative land use (i.e., the greater impact). Footnote will not be repeated.

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**Table 1**  
**Village 14 and Planning Areas 16/19 Site Utilization Plan Summary**

Description		Village 14		Planning Areas 16/19		Total Proposed Project	
		Gross	Target	Gross	Target	Gross	Target
		Acres <sup>a,b</sup>	Units <sup>c</sup>	Acres <sup>d,e</sup>	Units	Acres	Units
<i>Residential Subtotal</i>		344.2	897.0	363.6	125	707.7	1,022
	Residential Use on School Site (9.7 acres) <sup>c</sup>	—	97	—	—	—	97
<i>Non-Residential Uses</i>							
	Mixed Use <sup>f</sup>	1.7	—	—	—	1.7	—
	Public Parks	13.8	—	1.4	—	15.2	—
	Private Parks/Recreation <sup>b</sup>	4.5	—	—	—	4.5	—
	Public Safety Site	2.3	—	—	—	2.3	—
	Elementary School Site <sup>c</sup>	9.7	—	—	—	9.7	—
	Open Space	27.6	—	2.1	—	29.7	—
	Conserved Open Space	36.9	—	35.5	—	72.4	—
	Otay Ranch RMP Preserve	270.2	—	156.5	—	426.7	—
	Circulation	12.7	—	0.8	—	13.6	—
<i>Non-Residential Uses Subtotal</i>		379.5	—	196.3	—	575.8	—
<b>Total Proposed Project<sup>g</sup></b>		<b>723.7</b>	<b>994</b>	<b>559.8</b>	<b>125</b>	<b>1,283.5</b>	<b>1,119</b>

<sup>a</sup> Residential gross acres in Village 14 include 96.0 acres of related internal slopes, fuel modification, and/or preserve edge.

<sup>b</sup> Village 14 has 5 acres of private pocket parks (PPP) included in the residential acreage; therefore, the subtotal, including PPP is 9.5 acres.

<sup>c</sup> Units allocated to school site at 10 dwelling units per acre per the Otay Ranch GDP/SRP policies. Should school site not be needed, 97 units may be built. Should the school site be needed, the Total Target Units is 897 in Village 14 and 1,022 total.

<sup>d</sup> Residential gross acres in Planning Areas 16/19 includes 14.1 acres of related private lift and pump stations.

<sup>e</sup> Residential gross acres in Planning Areas 16/19 includes 127.1 acres of limited development area (LDA). See Table 4 for details.

<sup>f</sup> Village 14 Mixed Use acreage includes 10,000 sf of commercial use.

<sup>g</sup> 85.4 acres of off-site impacts are in excluded from the acreage shown in Table 1. See Table 5 for details.

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The following describes the major components and characteristics of the Proposed Project.

## Definitions

**County.** The “County” is the County of San Diego jurisdiction.

**Project Area.** The “Project Area” is the applicant’s ownership within Otay Ranch Village 14 and Planning Areas 16/19 in addition to certain off-site areas for infrastructure as depicted in Figure 1. The Project Area covers approximately 1,283.6 acres owned by the applicant and approximately 85.4 acres of off-site improvements described below, for a total of 1,369 acres.

**Proposed Project.** The “Proposed Project” is the applicant’s ownership, as depicted in Figure 1. The specific plan for the Proposed Project is titled “Otay Ranch Village 14 and Planning Areas 16/19 Specific Plan.” The Proposed Project includes a specific plan, general plan amendments, environmental impact report (EIR), rezone, tentative map, and an Otay Ranch RMP Amendment. The Proposed Project is further defined in Chapter 1, Project Description, of the Proposed Project’s EIR, which is incorporated herein by reference. Except for the off-site improvements described below, the Proposed Project specifically excludes the State of California’s ownership in Village 14 and Planning Areas 16/19, which remains approved for development per the County’s General Plan and the Otay Ranch GDP/SRP. The underlying County General Plan and Otay Ranch GDP/SRP land uses on the state’s property will remain unchanged. In addition, the “Inverted L” is excluded from this analysis as it is not owned by the applicant and is in the City of Chula Vista, (the property is owned by Otay Water District and the U.S. Fish and Wildlife Service (USFWS)).

**Otay Ranch Village 14.** “Otay Ranch Village 14” or “Village 14” as referred to herein is a discrete subset of the Proposed Project and reflects approximately 723.7 acres of the applicant’s ownership located exclusively within Village 14 as depicted in Figure 2. Approximately 994 homes are planned around a Village Core in this area, as shown in Table 2, Village 14 Site Utilization Plan Detail.

**Otay Ranch Planning Areas 16/19.** “Otay Ranch Planning Areas 16/19” or “Planning Areas 16/19” is a discrete subset of the Proposed Project and reflects approximately 559.8 acres of the applicant’s ownership located exclusively within Planning Areas 16/19 as depicted in Figure 2. Approximately 125 homes are planned on 1-acre- and 3-acre-average lots in this area, as shown in Table 3, Planning Areas 16/19 Site Utilization Plan Detail. Table 4, Planning Areas 16/19 LDA Detail, further describes 127.1 acres of Limited Development Area, defined below.

**Limited Development Area.** Limited Development Area (LDA) is a defined land use designation in the Otay Ranch GDP/SRP. “An open space easement will cover the areas designated as ‘Limited

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Development Area’...These areas will be left as natural open space with the exception that roads and utilities are anticipated to cross or lie within these areas...LDAs may be included within private lots but would have the following set of restrictions. Removal of native vegetation would be prohibited except as necessary for construction of roads and utilities. There would be no buildings or other structure, agriculture, landscaping, livestock, grazing, horses, trash disposal of fences allowed within these areas.” Fuel modification is allowed in the LDA as “brushing for fire control zones would conform to the local fire district regulations.” A total of 127.1 acres of LDA in Planning Areas 16/19 is further described in Table 4 LDA Detail. There is no LDA in Village 14.

**Table 2**  
**Village 14 Site Utilization Plan Detail**

Description		Gross Acres <sup>a,b</sup>	Target Units	Density
<i>Single-Family Residential</i>				
R-1	50x85 (lot dimension)	18.0	81	4.5
R-2	60x100	38.5	82	2.1
R-3	71x100	41.1	73	1.8
R-4	Courtyard	13.8	116	8.4
R-5	50x100	35.0	103	2.9
R-6	60x100	25.7	71	2.8
R-7	60x85	40.7	108	2.7
R-8	60x100	28.7	75	2.6
R-9	75x100	30.0	74	2.5
R-10	70x85	25.1	49	1.9
R-11	80x100	28.6	61	2.1
R-12	4-acre minimum	18.9	4	0.2
<i>Single Family Residential Subtotal</i>		344.2	897	2.6
Residential Use on School Site (9.7 acres) <sup>c</sup>		—	97	—
<i>Non-Residential Uses</i>				
Mixed Use <sup>d</sup>	MU-C	1.7	—	—
<i>Public Parks</i>				
P-1	South Park	2.9	—	—
P-2	Village Green Park	7.2	—	—
P-3	Scenic Park	3.7	—	—
<i>Public Parks Subtotal</i>		13.8	—	—
<i>Private Parks and Recreation</i>				
PP-1	South	1.0	—	—
PP-2	Central	1.2	—	—
PP-3	Private Park	0.7	—	—



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**Table 2**  
**Village 14 Site Utilization Plan Detail**

Description		Gross Acres <sup>a,b</sup>	Target Units	Density
PP-4	North	1.5	—	—
<i>Private Parks/Recreation Subtotal</i>		4.5	—	—
Public Safety Site		2.3	—	—
Elementary School Site <sup>c</sup>		9.7	—	—
Open Space		27.6	—	—
Conserved Open Space		36.9	—	—
Otay Ranch RMP Preserve		270.2	—	—
Circulation – Arterial		12.7	—	—
<i>Non-Residential Uses Subtotal</i>		379.5	—	—
<b>Village 14 Subtotal<sup>e</sup></b>		<b>723.7</b>	<b>994</b>	<b>1.4</b>

<sup>a</sup> Residential gross acres includes 96.0 acres of related internal slopes, fuel modification, and/or preserve edge open space lots.

<sup>b</sup> Village 14 has 5.0 acres of private pocket parks (PPPs) included in the residential acreage; therefore, the subtotal, including PPP, is 9.5 acres.

<sup>c</sup> Should the school site be needed, the total target units is 897.

<sup>d</sup> Village 14 mixed use acreage includes 10,000 square feet of commercial use.

<sup>e</sup> Off-site impacts are in excluded from the acreage shown in Table 2. See Table 5 for details.

**Table 3**  
**Planning Areas 16/19 Site Utilization Plan Detail**

Description		Gross Acres <sup>a,b</sup>	Target Units	Density
<i>Residential Uses</i>				
R-13	Estates 1 acre avg	13.4	13	1.0
R-14	Ranchettes 2-acre minimum	192.0	71	0.4
R-15	Ranchettes 2-acre minimum	41.9	11	0.3
R-16	Ranchettes 2-acre minimum	116.3	30	0.3
<i>Residential Subtotal</i>		363.55	125	0.3
<i>Non-Residential Uses</i>				
Public Park P-4	Northern Park	1.4	—	—
Open Space		2.1	—	—
Conserved Open Space		35.5	—	—
Otay Ranch RMP Preserve		156.5	—	—
Circulation – Arterial		0.8	—	—
<i>Non-Residential Uses Subtotal</i>		196.3	—	—
<b>Planning Areas 16/19 Subtotal<sup>c</sup></b>		<b>559.8</b>	<b>125.0</b>	<b>0.2</b>

<sup>a</sup> Gross acres includes 127.1 acres of LDA. See Table 4 for details.

<sup>b</sup> Residential gross acres includes 14.1 acres of related private lift and pump stations open space lots.

<sup>c</sup> Off-site impacts are in excluded from the acreage in Table 3. See Table 5 for details.

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**Table 4**  
**Planning Areas 16/19 Limited Development Area Detail**

Description		Component Acres		Acres
		LDA	Other	Total
<i>Residential Uses</i>				
R-13	Estates 1-acre average	0.0	13.4	13.4
R-14	Ranchettes 3-acre average	17.3	174.7	192.0
R-15	Ranchettes 3-acre average	27.1	14.8	41.9
R-16	Ranchettes 3-acre average	50.9	65.4	116.3
<i>Residential Subtotal</i>		<i>95.3</i>	<i>268.3</i>	<i>363.6</i>
<i>Non-Residential Uses</i>				
Public Park P-4	Northern Park		1.4	1.4
Open Space			2.1	2.1
Conserved Open Space		31.9	3.6	35.5
Otay Ranch RMP Preserve			156.5	156.5
Circulation – Arterial			0.8	0.8
<i>Non-Residential Uses Subtotal</i>		<i>31.9</i>	<i>164.4</i>	<i>196.3</i>
<b>Planning Areas 16/19 Subtotal</b>		<b>127.1</b>	<b>432.7</b>	<b>559.8</b>

**Otay Ranch RMP and “Multiple Species Conservation Program (MSCP) Preserve.** The “Otay Ranch Resource Management Plan (RMP)” provides for the conservation, funding and management of the entire 11,375-acre Otay Ranch RMP Preserve. The MSCP County Subarea Plan Implementing Agreement describes the County’s required contribution to the MSCP Preserve. The implementing agreement states that the required mitigation for Otay Ranch includes “protection of the areas identified as preserved in the boundaries of the Otay Ranch project including approximately 11,375 acres” of the Otay Ranch RMP Preserve. Therefore, the Otay Ranch RMP Preserve is a subset of the MSCP Preserve.

The portion of the Proposed Project’s land use designated as Otay Ranch RMP Preserve, while considered a part of the MSCP County Subarea Plan Preserve, is unique to Otay Ranch because it specifically mitigates for direct and cumulative impacts associated with implementation of the Otay Ranch GDP/SRP. The Proposed Project would include 426.7 acres of Otay Ranch RMP Preserve, of which 270.2 acres would be in Village 14 and 156.5 acres would be in Planning Areas 16/19.

**Preserve Conveyance Obligation.** To satisfy assemblage of the 11,375-acre Otay Ranch RMP Preserve ranch-wide, a “Preserve Conveyance Obligation” was prescribed in the Otay Ranch RMP. The Preserve Conveyance Obligation is 1.188 acres of Otay Ranch RMP Preserve conveyed per 1 acre of development, as further defined in the adopted Otay Ranch RMP. This obligation, which is the primary basis of Proposed Project’s required mitigation, may be

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achieved through conveyance of either the applicant's RMP Preserve ownership or through off-site acquisition within the 11,375 acres Otay Ranch RMP Preserve.

**Conserved Open Space.** "Conserved Open Space" refers to those areas with an Otay Ranch GDP/SRP land use designation other than Otay Ranch RMP Preserve that will be preserved on site and which will either be added to the Otay Ranch RMP Preserve (through a future RMP Amendment), managed under a separate Resource Management Plan, or utilized to mitigate impacts to the City of San Diego MSCP Cornerstone Lands. The approximately 72.4 acres of Conserved Open Space is comprised of 31.9 acres within the 127.1 acres of LDA and 3.6 acres of residential land use designation in Planning Areas 16/19 plus 36.9 acres of residential land use designation within Village 14. The Conserved Open Space areas are located adjacent to Otay Ranch RMP Preserve and will be conserved by recording a biological open space easement over the land.

**Development Footprint.** The "Development Footprint" includes areas where there will either be permanent or temporary ground disturbance. The Development Footprint includes all on-site development, off-site improvements, graded LDA, and impacts resulting from infrastructure and other allowable uses within the Otay Ranch RMP Preserve per Section 1.9.3 of the MSCP County Subarea Plan.

**Off-Site Improvements.** "Off-Site Improvements" total approximately 85.4 acres of both temporary and permanent impacts as shown in Table 5, Village 14 and Planning Areas 16/19 Off-Site Infrastructure (Temporary plus Permanent), and include the following: Proctor Valley Road, including related wet and dry utilities, drainage facilities and trails; access roads in Planning Area 16; an off-site sewer pump station in the southern reach of Proctor Valley Road and off-site sewer facilities to connect to the Salt Creek Interceptor as planned since 1994.

Proctor Valley Road improvements would include South Proctor Valley Road (0.25 miles in the City of Chula Vista land and 0.2 acres privately owned in the County); South and Central Proctor Valley Road (1.5 miles in City of San Diego Cornerstone land); Central Proctor Valley Road (0.4 miles in California Department of Fish and Wildlife (CDFW) Otay Ranch Village 14 land); and North Proctor Valley Road (0.75 miles in CDFW Otay Ranch land between Village 14 and Planning Areas).

**Table 5**  
**Village 14 and Planning Areas 16/19 Off-Site Infrastructure (Temporary plus Permanent)**

Off-Site <sup>a</sup>	Location	Acres		
		ROW	Temporary	Total
Proctor Valley Road – MSCP Planned Facility <sup>b</sup>				
South	City of Chula Vista	2.3	2.8	5.1
South	City of San Diego	10.1	17.6	27.7

# Acoustical Analysis Report for Otay Ranch Village 14 and Planning Areas 16/19

**Table 5**  
**Village 14 and Planning Areas 16/19 Off-Site Infrastructure (Temporary plus Permanent)**

Off-Site <sup>a</sup>	Location	Acres		
		ROW	Temporary	Total
Central	City of San Diego	2.8	4.3	7.1
Central	State	4.1	8.6	12.7
North	State	3.6	13.2	16.8
North	County of San Diego Easement	0.1	0.2	0.3
<i>PA 16 Access Roads – MSCP Allowed Facility<sup>b</sup></i>				
R-14 to R-15	State	0.3	1.0	1.3
R-15 to R-16	State	1.6	7.2	8.8
R-16 to Whispering Meadows	State	1.5	4.2	5.7
Sewer Trunk Line to Salt Creek Interceptor <sup>c</sup>	City of Chula Vista	—	—	—
<b>Total</b>		<b>26.4</b>	<b>59.0</b>	<b>85.4</b>

<sup>a</sup> Off-sites include all road improvements, sewer, water, drainage, and related utilities.

<sup>b</sup> See Section 1.9.3 of the MSCP for planned and allowed facilities.

<sup>c</sup> In existing improved Proctor Valley Road to approximate tie in at Hunte Parkway.

Central and South Proctor Valley Road are proposed to be improved and classified as a two-lane-with-median light collector with a width ranging from 68 to 74 feet, plus an additional 20-foot-wide fuel modification/construction easement on each side. North Proctor Valley Road is a two-lane interim road with a paved width of 28 feet in a 40-foot-wide right-of-way. Improvements in Proctor Valley Road would include those typically in roadways, including wet and dry utilities, a sewer pump station, drainage, landscape, culverts, and trails. Proctor Valley Road is an approved County General Plan mobility element road and an approved facility in the MSCP County Subarea Plan.

In addition, there are three public off-site roads within Planning Area 16. These roads are located primarily within CDFW managed lands and are approved in the Otay Ranch GDP/SRP as facilities within designated development or LDA land use (and are also approved facilities per the MSCP County Subarea Plan Section 1.9.3.3 (County of San Diego 1997)). Improvements in these off-site roads would include those typically in roadways, including wet and dry utilities, drainage, landscape, culverts, and trails.

## Proposed Specific Plan

### Summary

The adopted Otay Ranch GDP/SRP requires the preparation of a Specific Plan, which includes a site utilization plan to describe the land uses for the Proposed Project. Figures 2 and 3 depict the proposed site utilization plan. Tables 1–5 quantify the proposed land uses.

## **Acoustical Analysis Report for Otay Ranch Village 14 and Planning Areas 16/19**

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Approximately 994 homes are planned in Village 14, set in three distinct areas (referred to herein as the South, Central, and North Village 14). Of these homes, 878 would be single-family homes located in gated enclaves, and 116 would be detached courtyard homes. Twelve neighborhoods are planned with approximate densities ranging from 0.2 to 10.0 dwelling units per acre. Otay Ranch Village 14 is planned around a “Village Core,” centrally located in the heart of the village. The Village Core would be composed of a 9.7-acre elementary school site, a 7.2-acre village green (public park), a 1.7-acre mixed-use site with up to 10,000 square feet of commercial/retail uses, and a 2.3-acre public safety site for a fire station and satellite sheriff’s facility. Additional public and private parks, private swim clubs, trails and recreational facilities would be situated throughout South, Central, and North Village 14. See Table 2 for detailed land uses in Village 14.

In addition to the homes in Village 14, there would be 13 one-acre average sized estate lots proposed in Planning Area 19, and 112 three-acre average sized ranchettes proposed in Planning Area 16. Planning Areas 16/19 neighborhoods would not be gated. The LDA may include public infrastructure and/or be conserved within private lots with a conservation easement. See Tables 3 and 4 for detailed land uses in Planning Areas 16/19.

The Proposed Project’s Specific Plan is designed around an active lifestyle and wellness recreation theme and includes a park and recreation system, including four public parks totaling approximately 15.2 acres. The remaining private recreation facilities would include three pools and numerous pocket parks totaling approximately 9.5 acres. An approximately 4.5-mile, 10-foot-wide decomposed granite Community Pathway is proposed along Proctor Valley Road from Chula Vista to Jamul. The Proposed Project includes approximately 27.6 acres of open space, (exclusive of the 110.1 acres of open space included in the residential gross acres), 127.1 acres of LDA, and 426.7 acres of Otay Ranch RMP Preserve within the applicant’s ownership. Of note, there is approximately 72.4 acres of Conserved Open Space within the Proposed Project that will be conserved by recording a biological open space easement.

### ***Circulation and Access***

Regional access to Otay Ranch Village 14 is provided by State Route (SR-) 125, located approximately 3 miles to the west. Interstate 805 (I-805), approximately 8 miles to the west, provides secondary north/south access. SR-54, located approximately 6 miles to the northwest, connects to SR-125 and I-805, and provides regional east/west access. SR-94, located approximately 3 miles to the northeast, provides access from the east through the Jamul community.

Proctor Valley Road would provide the main access to the Proposed Project. Four roundabouts in Village 14 and one roundabout in Planning Areas 16/19 would identify the entrance into each residential area as well as provide traffic calming at key internal intersections. The internal

## **Acoustical Analysis Report for Otay Ranch Village 14 and Planning Areas 16/19**

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circulation plan also includes a series of collectors and residential streets to provide access to the residential neighborhoods, with Planning Areas 16/19 designed to County Rural Road Standards. A secondary access to the easternmost portion of Planning Area 16 is the planned extension of existing Whispering Meadows Lane.

Proctor Valley Road is planned as a two-lane mobility element road and is designated as a scenic corridor. The northern connection of Otay Ranch Village 14 to the community of Jamul will remain substantially in the alignment of the existing partially improved Proctor Valley Road and will be paved to provide both public access and secondary emergency access for the Proposed Project as well as for the community of Jamul.

### ***Public Services***

A recap of public services is provided as follows:

**Sewer:** Capacity will be provided by the County through annexation into the County Sanitation District. Sewer transportation will be provided by conveying flows to the Salt Creek Interceptor located in the City of Chula Vista pursuant to agreements between the City and County. Sewer will be provided in Village 14 and Planning Areas 16/19 per the Otay Ranch GDP/SRP and adopted sewer agreements. The Proposed Project includes sewer trunk line extensions and pump, or lift, stations.

**Water:** The Proposed Project is located within the Otay Water District boundary and is already accommodated in the Otay Water District Water Resources Master Plan. A 980-pressure zone water tank adjacent to Central Village 14 is planned on site. The Proposed Project includes water transmission lines, a 980 reservoir, and pump stations.

**Law Enforcement:** County Sheriff's office will provide law enforcement services and will have a storefront facility co-located with the fire station at the public safety site in the Village Core.

**Fire:** Fire service will be provided by the County Fire Authority (SDCFA) from a fire station built within the Proposed Project's public safety site in the Village Core.

**Stormwater/Drainage:** Biofiltration basins are planned.

**Schools:** Village 14 is planned to be served by the Chula Vista Elementary School District and Sweetwater Union High School District. Planning Areas 16/19 are planned to be served by the Jamul/Dulzura Union School District and the Grossmont High School District as prescribed in the adopted Otay Ranch GDP/SRP Facilities Implementation Plan and consistent with County Board of Supervisors Policy I-109, Policy II.

## **Acoustical Analysis Report for Otay Ranch Village 14 and Planning Areas 16/19**

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### ***Proctor Valley Road North and Trails Options***

The Proposed Project includes three options for internal circulation: (1) the Proctor Valley Road North Option, (2) the Preserve Trails Option, and (3) the Perimeter Trail Option. The Draft EIR assesses each of these options and their respective impacts. This will allow the County Board of Supervisors to select the option (or combination of options) it considers best for the Proposed Project and the environment. Each of the options is summarized as follows. For detailed descriptions with figures, see the Specific Plan Section VIII – Internal Circulation Options (RH Consulting 2018).

**Proctor Valley Road North Option:** The Proctor Valley Road North Option applies to the portion of Proctor Valley Road from Street AA in the North Village to Echo Valley Road. This Option includes two dedicated bike lanes (one on each side of the road) instead of the “sharrows” (road markings that guide bicyclists to bike routes between neighborhoods and alert motorists to the presence of bicyclists within the shared travel lane) proposed in street section 10 of the Proposed Project. Generally, the Proctor Valley Road North Option would increase the right-of-way width from 40 feet to 64 feet starting from the intersection of Street AA northward to the applicant’s Village 14 ownership boundary; from 40 feet to 48 feet within the off-site improvement area owned by the state; and from 40 feet to 64 feet on site within the applicant’s ownership north of the state’s property to Echo Valley Road.

**Preserve Trails Option:** The Preserve Trails Option consists of two segments of existing, disturbed trails approximately 1 mile in length within the Project Area, east of the Development Footprint. These segments would be located within the Otay Ranch RMP Preserve. The Preserve Trails Option includes segments “A” and “B” as identified in the Otay Ranch GDP/SRP, which are also identified as segments 52 and 49 in the County of San Diego’s Community Trails Master Plan (CTMP). Segment “A”/“52” is 2,350 lineal feet, located at the northern terminus of the Proctor Valley Community Pathway and extending east through the on-site Otay Ranch RMP Preserve to the eastern edge of the Echo Valley loop (CTMP Trail 53). Segment “B”/“49” is 2,328 lineal feet and is located between South and Central Village 14, along an existing, historic ranch road. This trail is located within on-site Otay Ranch RMP Preserve and bisects regional wildlife corridor R1. The Preserve Trails Option would retain these portions of trails in their existing conditions, which meet the CTMP primitive trail standard. No improvements to these Preserve trails are contemplated.

**Perimeter Trail Option:** The Perimeter Trail Option is an approximately 3.6-mile perimeter trail located within the Development Footprint of South and Central Village 14. The Perimeter Trail Option is situated primarily within the Otay Ranch RMP 100-foot Preserve edge. The Perimeter Trail Option is designed to CTMP primitive trail standards, and the trail tread varies from 2 to 6 feet. Due to topography, trail grades range from 2% to the maximum grade allowed

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of 30%. The Perimeter Trail Option requires the construction of approximately 19,000 lineal feet (0.7 miles) of 5- to 7-foot-high retaining walls due to steep topography and drainage constraints. The Perimeter Trail Option would be graded as part of overall project grading and does not encroach into the Otay Ranch RMP Preserve. The perimeter trail would be accessed at public parks and trailheads and would be maintained by the County.

Dudek has evaluated these options and determined they are not material to the information presented in this analysis because (1) the construction of these options would not change the equipment mix and construction noise levels and (2) the operation of these options would not result in significant noise.



# **Acoustical Analysis Report for Otay Ranch Village 14 and Planning Areas 16/19**

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## **2 FUNDAMENTALS OF NOISE AND VIBRATION**

The following is a brief discussion of fundamental noise concepts and terminology.

### **2.1 Sound, Noise, and Acoustics**

Sound is actually a process that consists of three components: the sound source, sound path, and sound receiver. All three components must be present for sound to exist. Without a source to produce sound, there is no sound. Similarly, without a medium to transmit sound pressure waves, there is no sound. Finally, sound must be received; a hearing organ, sensor, or object must be present to perceive, register, or be affected by sound or noise. In most situations, there are many different sound sources, paths, and receptors rather than just one of each. Acoustics is the field of science that deals with the production, propagation, reception, effects, and control of sound. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired.

### **2.2 Sound Pressure Levels and Decibels**

The amplitude of a sound determines its loudness. Loudness of sound increases with increasing amplitude. Sound pressure amplitude is measured in units of micronewton per square meter, also called micropascal. One micropascal is approximately one-hundred billionth (0.0000000001) of normal atmospheric pressure. The pressure of a very loud sound may be 200 million micropascals, or 10 million times the pressure of the weakest audible sound. Because expressing sound levels in terms of micropascal would be very cumbersome, sound pressure level in logarithmic units is used instead to describe the ratio of actual sound pressure to a reference pressure squared. These units are called Bels. To provide a finer resolution, a Bel is subdivided into 10 decibels (dB).

### **2.3 A-Weighted Sound Level**

Sound pressure level alone is not a reliable indicator of loudness. The frequency, or pitch, of a sound also has a substantial effect on how humans will respond. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness, or human response, is determined by the characteristics of the human ear.

Human hearing is limited not only in the range of audible frequencies, but also in the way it perceives the sound in that range. In general, the healthy human ear is most sensitive to sounds between 1,000 and 5,000 hertz, and it perceives a sound within that range as more intense than a sound of higher or lower frequency with the same magnitude. To approximate the frequency response of the human ear, a series of sound level adjustments is usually applied to the sound measured by a sound level meter. The adjustments (referred to as a weighting network) are frequency-dependent.

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The A-scale weighting network approximates the frequency response of the average young ear when listening to ordinary sounds. When people make judgments about the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special situations (e.g., B-scale, C-scale, D-scale), but these scales are rarely used in conjunction with most environmental noise. Noise levels are typically reported in terms of A-weighted sound levels. All sound levels discussed in this report are A-weighted decibels (dBA). Examples of typical noise levels for common indoor and outdoor activities are depicted in Table 6.

**Table 6**  
**Typical Sound Levels in the Environment and Industry**

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
—	110	Rock band
Jet fly over at 300 meters (1,000 feet)	100	—
Gas lawn mower at 1 meter (3 feet)	90	—
Diesel truck at 15 meters (50 feet), at 80 kilometers per hour (50 miles per hour)	80	Food blender at 1 meter (3 feet); garbage disposal at 1 meter (3 feet)
Noisy urban area, daytime; gas lawn mower at 30 meters (100 feet)	70	Vacuum cleaner at 3 meters (10 feet)
Commercial area; heavy traffic at 90 meters (300 feet)	60	Normal speech at 1 meter (3 feet)
Quiet urban, daytime	50	Large business office; dishwasher next room
Quiet urban, nighttime	40	Theater; large conference room (background)
Quiet suburban, nighttime	30	Library
Quiet rural, nighttime	20	Bedroom at night; concert hall (background)
—	10	Broadcast/Recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 1998.

## 2.4 Human Response to Changes in Noise Levels

Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of 1 dBA when exposed to steady, single-frequency signals in the mid-frequency range. Outside such controlled conditions, the trained ear can detect changes of 2 dBA in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dBA. A change of 5 dBA is readily perceptible, and a change of 10 dBA is perceived as twice or half as loud. A doubling of sound energy results in a 3-dBA increase in sound, which means that a doubling of sound energy (e.g., doubling the volume of traffic on a road) would result in a barely perceptible change in sound level.

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## 2.5 Noise Descriptors

Additional units of measure have been developed to evaluate the long-term characteristics of sound. The equivalent sound level ( $L_{eq}$ ) is also referred to as the time-average sound level. The equivalent steady-state sound level that in a stated period of time would contain the same acoustical energy as the time-varying sound level during the same time period. The 1-hour A-weighted equivalent sound level,  $L_{eq}(h)$ , is the energy average of the A-weighted sound levels occurring during a 1-hour period, and is the basis for the County noise policies and standards.

People are generally more sensitive and annoyed by noise occurring during the evening and nighttime hours. Thus, another noise descriptor used in community noise assessments—the community noise equivalent level (CNEL)—was introduced. The CNEL scale represents a time-weighted, 24-hour average noise level based on the A-weighted sound level. The CNEL accounts for the increased noise sensitivity during the evening hours (7 p.m. to 10 p.m.) and nighttime hours (10 p.m. to 7 a.m.) by adding 5 dBA and 10 dBA, respectively, to the average sound levels occurring during the evening and nighttime hours.

## 2.6 Sound Propagation

Sound propagation (i.e., the passage of sound from a noise source to a receiver) is influenced by geometric spreading, ground absorption, atmospheric effects, and shielding by natural and/or built features.

Sound levels attenuate (or diminish) at a rate of approximately 6 dBA per doubling of distance from an outdoor point source due to the geometric spreading of the sound waves. Atmospheric conditions such as humidity, temperature, and wind gradients can also temporarily either increase or decrease sound levels. In general, the greater the distance the receiver is from the source, the greater the potential for variation in sound levels due to atmospheric effects. Additional sound attenuation can result from built features such as intervening walls and buildings, and by natural features such as hills and dense woods.

## 2.7 Groundborne Vibration Fundamentals

Groundborne vibration is a small, rapidly fluctuating motion transmitted through the ground. The strength of groundborne vibration attenuates rapidly over distance. Some soil types transmit vibration quite efficiently; other types (primarily sandy soils) do not. Several basic measurement units are commonly used to describe the intensity of ground vibration. The descriptors used by the Federal Transit Administration (FTA) are peak particle velocity (PPV), in units of inches per second, and velocity decibel (VdB). The calculation to determine PPV at a given distance is as follows:

$$PPV_{distance} = PPV_{ref} * (25/D)^{1.5}$$

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Where:

$PPV_{\text{distance}}$  = the peak particle velocity in inches per second of the equipment adjusted for distance

$PPV_{\text{ref}}$  = the reference vibration level in inches per second at 25 feet

$D$  = the distance from the equipment to the receiver

The velocity parameter (instead of acceleration or displacement) best correlates with human perception of vibration. Thus, the response of humans, buildings, and sensitive equipment to vibration is described in this section in terms of the root-mean square velocity level in VdB units relative to 1 microinch per second. As a point of reference, the average person can just barely perceive vibration velocity levels below 70 VdB (typically in the vertical direction). The calculation to determine the root-mean square at a given distance is as follows:

$$L_v(D) = L_v(25 \text{ feet}) - 30 \cdot \log(D/25)$$

Where:

$L_v(D)$  = the vibration level at the receiver

$L_v(25 \text{ feet})$  = the reference source vibration level

$D$  = the distance from the vibration activity to the receiver

Typical background vibration levels are between 50 and 60 VdB, and the level for minor cosmetic damage to fragile buildings or blasting generally begins at 100 VdB.

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## **3 APPLICABLE NOISE REGULATIONS AND STANDARDS**

The County of San Diego has adopted various noise policies and standards contained within the County's General Plan Noise Element and the County Noise Ordinance. The City of Chula Vista has adopted noise standards as well as performance standards and noise control contained within the City's General Plan Environmental Element and City's Noise Ordinance, respectively. The above-mentioned jurisdiction's noise policies and standards are summarized below.

### **County of San Diego General Plan, Noise Element**

The County's General Plan Noise Element (Noise Element) establishes noise and land use compatibility standards and outlines goals and policies to achieve these standards. The Noise Element characterizes the noise environment in the County and provides the context for the County's noise/land use compatibility guidelines and standards. The Noise Element also describes the County's goals for achieving the standards and introduces policies designed to implement the goals. Under implementation of the General Plan, the County would use the Noise Compatibility Guidelines to determine the compatibility of land uses when evaluating proposed development projects. The Noise Compatibility Guidelines indicate ranges of compatibility and are intended to be flexible enough to apply to a range of projects and environments.

A land use located in an area identified as "acceptable" indicates that standard construction methods would attenuate exterior noise to an acceptable indoor noise level and that people can carry out outdoor activities with minimal noise interference. Land uses that fall into the "conditionally acceptable" noise environment should have an acoustical study that considers the type of noise source, the sensitivity of the noise receptor, and the degree to which the noise source has the potential to interfere with sleep, speech, or other activities characteristic of the land use. For land uses indicated as "conditionally acceptable," structures must be able to attenuate the exterior noise to the indoor noise level as indicated in the Noise Compatibility Guidelines. For land uses where the exterior noise levels fall within the "unacceptable" range, new construction generally should not be undertaken (San Diego County 2011a).

### **San Diego County Code of Regulatory Ordinances Title 3, Division 6, Chapter 4, Sections 36.401–36.435, Noise Ordinance**

The Noise Ordinance establishes prohibitions for disturbing, excessive, or offensive noise as well as provisions such as sound level limits for the purpose of securing and promoting the public health, comfort, safety, peace, and quiet for its citizens. Planned compliance with sound level limits and other specific parts of the ordinance allows presumption that the noise is not disturbing, excessive, or offensive. Limits are specified depending on the zoning placed on a property (e.g., varying densities and intensities of residential, industrial, and commercial zones).

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Where two adjacent properties have different zones, the sound level limit at a location on a boundary between two properties is the arithmetic mean of the respective limits for the two zones, except for extractive industries. It is unlawful for any person to cause or allow the creation of any noise that exceeds the applicable limits of the Noise Ordinance at any point on or beyond the boundaries of the property on which the sound is produced.

Section 36.404 of the Noise Ordinance contains sound level limits specific to receiving land uses. Sound level limits are in terms of a 1-hour average sound level. The allowable noise limits depend upon the County's zoning district and time of day. The Proposed Project would be located within Specific Plan Area and Open Space zones. Table 7 lists the sound level limits for the County.

**Table 7**  
**San Diego County Noise Ordinance Sound Level Limits**

Zone	Applicable Limit 1-Hour Average Sound Level (dB)		
	7 a.m. to 7 p.m.	7 p.m. to 10 p.m.	10 p.m. to 7 a.m.
(1) RS, RD, RR, RMH, A70, A72, S80, S81, S87, S90, S92, RV, and RU with a density of less than 11 dwelling units per acre	50	50	45
(2) RRO, RC, RM, S86, V5, and RV and RU with a density of 11 or more dwelling units per acre	55	55	50
(3) S94, V4, and all other commercial zones	60	60	55
(4) V1 and V2	60	55	see below
V1	60	55	55
V2	60	55	50
V3	70	70	65
(5) M50, M52, and M54	70	70	70
(6) S82, M56, and M58	75	75	75
(7) S88 (see note 4)			

**Source:** County of San Diego 2008.

**Notes:**

RS, RD, RM, RR, RU, RV, RRO, RMH, RU = Residential uses; A70, A72 = Agricultural uses; S80, S81, S82, S87, S90 = Open space uses, ecological resource areas, or holding area uses; S92 = General rural uses; RC = Residential/commercial uses; S86 = parking uses; V1, V2, V3, V4, V5 = Village uses; M50, M52, M54, M56, M58 = Manufacturing and industrial uses; S88 = Special planning area uses.

<sup>1</sup> If the measured ambient level exceeds the applicable limit noted in the table, the allowable 1-hour average sound level will be the ambient noise level. The ambient noise level will be measured when the alleged noise violation source is not operating.

<sup>2</sup> The sound-level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts; provided, however, that the 1-hour average sound-level limit applicable to extractive industries, including but not limited to borrow pits and mines, will be 75 dB at the property line, regardless of the zone where the extractive industry is actually located.

<sup>3</sup> Fixed-location, public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise-level limits of this section, measured at or beyond 6 feet from the boundary of the easement upon which the equipment is located.

<sup>4</sup> S88 zones are Specific Planning Areas, which allow different uses. The sound level limits present in Table 2 that apply in an S88 zone depend on the use being made of the property. The limits in the table, subsection (1) apply to a property with a residential, agricultural, or civic use. The limits in subsection (3) apply to a property with a commercial use. The limits in subsection (5) apply to a property with an industrial use that would only be allowed in an M50, M52, or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.

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Section 36.408 of the Noise Ordinance sets limits on the time of day and days of the week that construction can occur, as well as setting noise limits for construction activities. In summary, the Noise Ordinance prohibits operating construction equipment on the following days and times:

- Mondays through Saturdays except between 7 a.m. and 7 p.m.
- Sundays or a holiday. A holiday means January 1, the last Monday in May, July 4, the first Monday in September, December 25, and any day appointed by the president as a special national holiday or the governor of the state as a special state holiday.

In addition, Section 36.409 requires that between 7 a.m. and 7 p.m., no equipment shall be operated so as to cause an 8-hour average construction noise level in excess of 75 dBA when measured at the boundary line of the property where the noise source is located, or on any occupied property where the noise is being received.

Additional sound level limitations are provided in Section 36.410:

In addition to the general limitations on sound levels in Section 36.404 and the limitations on construction equipment in Section 36.409, the following additional sound level limitations shall apply:

- (a) Except for emergency work or work on a public road project, no person shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 8, when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25% of the minutes in the measurement period, as described in Section 36.410(c) of the County's Noise Ordinance. The maximum sound level depends on the use being made of the occupied property. The uses in Table 8 are as described in the County Zoning Ordinance.

**Table 8**  
**County of San Diego Noise Ordinance, Section 36.410, Maximum Sound Level (Impulsive)**  
**Measured at Occupied Property in Decibels**

<b>Occupied Property Use</b>	<b>dBA</b>
Residential, village zoning, or civic use	82
Agricultural, commercial, or industrial use	85

- (b) Except for emergency work, no person working on a public road project shall produce or cause to be produced an impulsive noise that exceeds the maximum

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sound level shown in Table 9, when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25% of the minutes in the measurement period, as described in Section 36.410 (c) of the County's Noise Ordinance. The maximum sound level depends on the use being made of the occupied property. The uses in Table 9 are as described in the County Zoning Ordinance.

**Table 9**  
**County of San Diego Noise Ordinance, Section 36.410, Maximum Sound Level (Impulsive)**  
**Measured at Occupied Property in Decibels for Public Road Projects**

<b>Occupied Property Use</b>	<b>dBA</b>
Residential, village zoning, or civic use	85
Agricultural, commercial, or industrial use	90

- (c) The minimum measurement period for any measurements conducted under this section shall be one hour. During the measurement period a measurement shall be conducted every minute from a fixed location on an occupied property. The measurements shall measure the maximum sound level during each minute of the measurement period. If the sound level caused by construction equipment or the producer of the impulsive noise, exceeds the maximum sound level for any portion of any minute it will be deemed that the maximum sound level was exceeded during that minute.

Although the Project Area is located within unincorporated County of San Diego, the project is adjacent to the City of Chula Vista, and the majority of project-related traffic is predicted to travel along City of Chula Vista arterial roads, coming to and from the Project Area. For this reason, City of Chula Vista noise regulations are included here and are used in the assessment of off-site impacts to noise-sensitive land uses located in Chula Vista.

### **City of Chula Vista General Plan Environmental Element**

The City of Chula Vista's General Plan Environmental Element illustrates the City's exterior land use/noise compatibility guidelines, which is shown in Table 10, below. These guidelines reflect the levels of noise exposure that are generally considered compatible with various types of land uses.



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**Table 10**  
**City of Chula Vista Exterior Land Use/Noise Compatibility Guidelines**

Land Use	Annual Community Noise Equivalent Level in Decibels					
	50	55	60	65	70	75
Residential						
Schools, libraries, daycare facilities, convalescent homes, outdoor use areas, and other similar uses considered noise sensitive						
Neighborhood parks, playgrounds						
Community parks, athletic fields						
Offices and professionals						
Places of worship (excluding outdoor use areas)						
Golf courses						
Retail and wholesale commercial, restaurants, movie theaters						
Industrial, manufacturing						

Source: City of Chula Vista 2005.

### City of Chula Vista Performance Standards and Noise Control

Chapter 19.68 of the City of Chula Vista's Zoning Code provides the City's performance standards and noise control ordinance.

Section 19.68.030 of the City's Noise Ordinance contains exterior noise limits specific to receiving land uses. The allowable noise limits depend upon the City's zoning district and time of day. Table 11 lists the exterior noise limits for the City, and Table 12 lists the interior noise limits for the City.

**Table 11**  
**City of Chula Vista Exterior Noise Limits**

Receiving Land Use Category	Noise Level (dBA)	
	10 p.m. to 7 a.m. (Weekdays)	7 a.m. to 10 p.m. (Weekdays)
	10 p.m. to 8 a.m. (Weekends)	8 a.m. to 10 p.m. (Weekends)
All residential (except multiple dwelling)	45	55
Multiple dwelling residential	50	60
Commercial	60	65
Light industry – I-R and I-L zone	70	70
Heavy industry – I zone	80	80

Source: City of Chula Vista 2015.

dBA = A-weighted decibel; I-R = Research Industrial zone; I-L = Limited Industrial zone; I = General Industrial zone

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**Table 12**  
**City of Chula Vista Interior Noise Limits**

Type of Land Use	Time Interval	Noise Level (dBA) not to be Exceeded		
		<i>Anytime</i>	<i>1 minute in 1 hour</i>	<i>5 minutes in 1 hour</i>
Multifamily	10 p.m. – 7 a.m.	45	40	35
Residential	7 a.m. – 10 p.m.	55	50	45

Source: City of Chula Vista 2015.  
dBA = A-weighted decibel

### City of Chula Vista Municipal Code, Title 17 (Environmental Quality)

Title 17 of the Chula Vista Municipal Code (Environmental Quality), Chapter 24, addresses managing noisy and disorderly conduct. Section 17.24.040.C.8 specifically addresses restrictions against generation of construction noise in overnight periods. The use of any tools, power machinery, or equipment, or the conduct of construction and building work in residential zones so as to cause noises disturbing to the peace, comfort, and quiet enjoyment of property of any person residing or working in the vicinity is prohibited between 10 p.m. and 7 a.m., Monday–Friday, and between 10 p.m. and 8 a.m., Saturday and Sunday, except when the work is necessary for emergency repairs required for the health and safety of any member of the community (City of Chula Vista 2010).

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## **4 ENVIRONMENTAL SETTING, EXISTING, AND POTENTIAL FUTURE CONDITIONS**

### **4.1 Geographical Setting and Surrounding Land Uses**

The Project Area is located in Proctor Valley, a south-sloping valley that encompasses Proctor Valley Road. The Project Area is undeveloped, with on-site elevation ranging between 550 and 1,345 feet above mean sea level. The Project Area is surrounded by San Miguel Mountain and the Jamul Mountains immediately to the northwest and southeast, with the foothills of these mountains encroaching into the Project Area. The eastern portions of Planning Area 16 are located in the Jamul Mountains and contain the highest elevations.

Existing development, including the master planned communities of Eastlake Woods, Bella Lago, Salt Creek Ranch, and Rolling Hills Ranch, is located within approximately 0.5 miles to the southwest of the Project Area. Commercial centers are located in Eastlake and Rolling Hills Ranch and regional shopping is located in Otay Ranch. The proposed Village 13 Resort development is located to the south of the Project Area. The Otay Lakes are located to the south of the Project Area along with the City of San Diego's MSCP "Cornerstone Lands," which are adjacent to the Project Area to the south. To the north and northeast of the Proposed Project lies the community of Jamul and to the northwest, Rancho San Diego. Most of the land in the vicinity of the Project Area to the west and east is vacant; some of it consists of gently rolling hills used for agriculture and grazing, with the balance being more rugged, steep open space. Development is primarily concentrated around Rancho San Diego to the north and the rural community of Jamul to the northeast. Jamul is comprised of primarily large-lot estates, horse ranches, and agriculture.

The 11,152-acre San Diego National Wildlife Refuge (Refuge) is located to the west of the Project Area. The Refuge stretches from Jamul to communities in Spring Valley and eastern Chula Vista. The Refuge is the USFWS's contribution to the MSCP Preserve. The approximately 5,600-acre Rancho Jamul Ecological Reserve is also a component of the San Diego MSCP and is owned and managed by the CDFW. These state-owned lands are adjacent to the Project Area, with a large block of habitat located to the east of the Project Area.

The Bureau of Land Management manages two separate parcels within the northern portion of the Proctor Valley Parcel of Otay Ranch. The large northern out parcel encompasses the Callahan Mountain Peak and some of the tops of side-slopes extending down from the peak.

### **4.2 Existing Noise Conditions**

The primary existing noise source within the Project Area is vehicular traffic along Proctor Valley Road. Proctor Valley Road is a two-lane, partially improved road. The existing traffic

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volume within the Project Area is approximately 200 ADT (Chen Ryan Associates 2017). No other existing noise sources potentially affecting the Proposed Project have been identified.

There are no existing Noise Sensitive Land Uses (NSLUs) immediately adjacent to the Project Area. The nearest existing NSLUs to the Project Area are single-family residences near the southwest boundary of Jamul, located as near as 60 feet to the north, and single-family residences in the Bella Lago community, located approximately 2,900 feet to the southwest.

### **4.3 Potential Build-Out Noise Conditions**

Proctor Valley Road will be the primary traffic noise source. It is predicted to have a year 2030 traffic volume of up to 17,900 ADT without the Proposed Project and 29,400 ADT with the Proposed Project with full GDP/SRP Build-Out (Chen Ryan Associates 2017).<sup>3</sup>

### **4.4 Methodology and Equipment**

#### **4.4.1 Noise Measuring Methodology and Procedures**

The existing noise environment in the Project Area was measured on May 6, 2015. The noise measurements were taken with calibrated Rion NL 32 integrating sound level meters using A-weighting and “slow” response settings. The sound level meters are equipped with 0.5-inch pre-polarized condenser microphone and pre-amplifier. The sound level meters meet the current American National Standards Institute standard for a Type 1 precision sound level meter. The sound level meters were positioned at a height of approximately 5 feet above the ground during the noise measurements. Eleven noise measurement locations that represent key potential sensitive receptors, or sensitive land uses were selected along Proctor Valley Road within the Project Area and adjacent to other roadways projected to carry potentially significant Proposed Project traffic volumes. These locations are depicted as M1 through M11 in Figure 4, Noise Measurement Locations. A description of the noise measurement locations and the results of the noise measurements are presented in Table 13. Field notes and photos are provided in Appendix A.

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<sup>3</sup> Year 2030 Cumulative Conditions with full GDP/SRP build-out traffic conditions assume that all of the additional dwelling units allowed under the approved Otay Ranch GDP/SRP, in the areas not included within the site of the Proposed Project, would be developed. This is a theoretical, highly unlikely scenario as the site of a majority of the additional dwelling units that would be developed under this scenario is located in Village 14 and Planning Area 16 on State property (Rancho Jamul Preserve). Accordingly, it is highly unlikely that these additional units would ever be developed. However, as a conservative measure, and to be consistent with the project’s worst-case traffic analysis (Chen Ryan Associates 2017) these traffic conditions are analyzed for the assessment of on-site traffic noise impacts. For the off-site traffic impacts assessment, the traffic volumes for the Year 2030 (without full GDP/SRP build-out) Cumulative Conditions are used.

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**Table 13**  
**Noise Measurement Results**

Receptors	Date	Time	Description	Leq (dBA)	Lmax (dBA)
M1	May 6, 2015	3:54–4:14 p.m.	Open space area along the east side of Proctor Valley Road, approximately 60 feet from the center line	49.1	68.0
M2	May 6, 2015	3:11–3:31 p.m.	Open space area along the east side of Proctor Valley Road, approximately 50 feet from the center line	50.7	69.5
M3	May 6, 2015	2:35–2:55 p.m.	Open space area along the east side of Proctor Valley Road, approximately 165 feet from the center line	50.7	67.6
M4	May 6, 2015	4:35–4:55 p.m.	790 Lake House Place Chula Vista, California 91914 – Residence elevated from Proctor Valley Road	47.3	62.2
M5	May 6, 2015	5:47–6:07 p.m.	Pedestrian walkway northeast of 606 San Marino Place Chula Vista, California 91914 – Elevated from Proctor Valley Road	66.4	72.7
M6	May 6, 2015	6:24–6:44 p.m.	2335 Paseo Veracruz Chula Vista, California 91914 – Park on a lower elevation than Mount Miguel Road	55.1	61.9
M7	May 6, 2015	5:13–5:33 p.m.	704 Pueblo Place Chula Vista, California 91914 – Residence elevated from Lane Avenue	53.4	60.6
M8	May 6, 2015	1:58–2:18 p.m.	2852 Shadow Valley Jamul, California 91935 – In front of residence gate on dirt access road	53.8	72.1
M9	May 6, 2015	1:27–1:47 p.m.	13828 Proctor Valley Road Jamul, California 91935 – Residence driveway	50.8	63.1
M10	May 6, 2015	12:58–1:18 p.m.	3007 Calle Mesquite Jamul, California 91935 – Residence driveway	48.7	64.1
M11	May 6, 2015	12:15–12:35 p.m.	13939 Maxfield Road Jamul, California 91935	46.9	66.2

**Source:** Appendix A and Figure 4

L<sub>eq</sub> = equivalent continuous sound level (time-averaged sound level); L<sub>max</sub> = maximum sound level during the measurement interval; dBA = A-weighted decibel

## 4.4.2 Noise Modeling Software

The vehicle noise level from Proctor Valley Road within the Project Area and along other roadway segments projected to carry potentially significant project traffic volumes was calculated using the Federal Highway Administration Traffic Noise Model (TNM) – TNM version 2.5 (FHWA 2004). TNM sound modeling input/output data are included in Appendix B.

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## 4.4.3 Noise Calculations

### Traffic Noise Modeling Screening

Because of the size of the off-site traffic impact analysis area (Chen Ryan Associates 2017) and the number of associated roadway segments, a preliminary screening analysis was performed to estimate the relative increase in traffic noise from the Proposed Project. Roadway segments with an estimated increase in noise levels of 0.5 dB or more based upon the ADT volumes (either in the Existing plus Project scenario or the Year 2030 with Project (i.e., Year 2030 Cumulative Conditions) scenario) were modeled in detail using the TNM model, in order to determine the potential for a significant noise impact. Roadway segments with an estimated increase in noise levels of less than 0.5 dB were not modeled using the TNM model. The modeled roadway segments and off-site receivers analyzed using TNM and the input data are listed in Table 14 and shown in Figure 5.

**Table 14**  
**Modeled Roadway Segments (Off-Site Receivers)**

Roadway	From/To (Jurisdiction)	Modeled Receiver	Average Traffic Speed (MPH)	Existing Traffic Volume CNEL (ADT)	Existing plus Project Traffic Volume CNEL (ADT)	Year 2030 Traffic Volume CNEL (ADT)	Year 2030 plus Project (Year 2030 Cumulative Conditions) Traffic Volume CNEL (ADT)
San Miguel Ranch Road	Proctor Valley Road to SR- 125 SB Ramp (Chula Vista)	R1	45	8,300	9,400	13,600	14,600
San Miguel Ranch Road / Mt. Miguel Road	SR-125 NB Ramp to Proctor Valley Road (Chula Vista)	R2, R13	40	10,100	11,200	9,700	10,700
Proctor Valley Road	SR-125 NB Ramps to Mt. Miguel Road (Chula Vista)	R3	45	21,700	26,800	25,700	30,800
Proctor Valley Road	Mt. Miguel Road to Lane Avenue (Chula Vista)	R4	45	20,000	27,400	34,000	40,400

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**Table 14**  
**Modeled Roadway Segments (Off-Site Receivers)**

Roadway	From/To (Jurisdiction)	Modeled Receiver	Average Traffic Speed (MPH)	Existing Traffic Volume CNEL (ADT)	Existing plus Project Traffic Volume CNEL (ADT)	Year 2030 Traffic Volume CNEL (ADT)	Year 2030 plus Project (Year 2030 Cumulative Conditions) Traffic Volume CNEL (ADT)
Lane Avenue	Proctor Valley to Otoy Lakes Road (Chula Vista)	R5	40	10,800	11,400	12,700	14,400
Proctor Valley Road	Lane Avenue to Hunte Parkway (Chula Vista)	R6	45	14,200	23,400	21,900	30,200
Hunte Parkway	Proctor Valley to Otoy Lakes Road (Chula Vista)	R7	45	6,300	8,900	9,100	11,400
Hunte Parkway	Otoy Lakes Road to Olympic Parkway (Chula Vista)	R8	45	10,900	12,300	17,200	18,500
Hunte Parkway	Olympic Parkway to Eastlake Parkway (Chula Vista)	R9	50	2,000	2,400	35,000	35,400
Proctor Valley Road	Hunte Parkway to Northwood Drive (Chula Vista)	R10, R12	45	5,800	17,500 <sup>b</sup>	14,800	30,000
Northwoods Drive	Proctor Valley Road to Blue Ridge Drive (Chula Vista)	R11	45	1,400	1,900	400	1,200
Proctor Valley Road	Proposed Project Driveway No. 8 to Melody Road (San Diego County)	R14	25 (existing) / 45 (future) <sup>a</sup>	200	700 <sup>b</sup>	6,200	6,900

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**Table 14**  
**Modeled Roadway Segments (Off-Site Receivers)**

Roadway	From/To (Jurisdiction)	Modeled Receiver	Average Traffic Speed (MPH)	Existing Traffic Volume CNEL (ADT)	Existing plus Project Traffic Volume CNEL (ADT)	Year 2030 Traffic Volume CNEL (ADT)	Year 2030 plus Project (Year 2030 Cumulative Conditions) Traffic Volume CNEL (ADT)
Proctor Valley Road	Melody Road to Schlee Canyon Road (San Diego County)	R15	45	1,700	2,200	6,600	6,900
Melody Road	Proctor Valley Road to SR- 94 (San Diego County)	R16	40	300	600	5,200	5,500
Proctor Valley Road	Schlee Canyon Road to Maxfield Road (San Diego County)	R17	40	2,100	2,500	5,400	5,600
Proctor Valley Road	Maxfield Road to SR- 94 (San Diego County)	R18	40	2,500	2,800	5,300	5,500

<sup>a</sup> Because Proctor Valley Road is currently unpaved in this area, the speed limit is 25 mph. In the future (year 2030) scenarios, Proctor Valley Road will be fully paved, and it is anticipated that the speed limit will be the same as the adjoining roadway segments.

<sup>b</sup> Existing plus Project traffic volumes would result in more than double the existing traffic volume along this segment. There is a potential for a direct noise impact.

Modeled vehicle speeds were based upon the posted speed limits. The modeled vehicle mix of 97% automobiles, 2% medium trucks, and 1% buses was based upon the vehicle counts conducted in concurrence with the field noise measurements.



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## 5 NOISE SENSITIVE LAND USES

### 5.1 Guidelines for the Determination of Significance

#### County of San Diego

Based upon the County's Guidelines for Determining Significance: Noise (County of San Diego 2009a), the Proposed Project would result in a significant noise impact if it would result in the exposure of any on- or off-site, existing, or reasonably foreseeable future NSLUs to exterior or interior noise in excess of any of the following (County of San Diego 2009a):

#### A. Exterior Locations:

- i. 60 dB (CNEL) (Single-Family Residential); 65 dB (CNEL) (Multi-Family Residential, Mixed-Use, Schools, Passive Recreation Parks etc.); or
- ii. An increase of 10 dB (CNEL) over pre-existing noise.

In the case of single-family residential detached NSLUs, exterior noise shall be measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum area:

1. Net lot area up to 4,000 square feet: 400 square feet
2. Net lot area 4,000 square feet to 10 acres: 10% of net lot area
3. Net lot area over 10 acres: 1 acre.

For all other projects, exterior noise shall be measured at all exterior areas provided for group or private usable open space.

#### B. Interior Locations:

45 dB (CNEL) except for the following cases:

- i. Rooms which are usually occupied only a part of the day (schools, libraries, or similar facilities), the interior one-hour average sound level due to noise outside should not exceed 50 dB(A).
- ii. Corridors, hallways, stairwells, closets, bathrooms, or any room with a volume less than 490 cubic feet.

As previously noted, a potentially significant noise increase is defined as an increase of 10 dBA CNEL above existing conditions, as stated in the County's Guidelines for Determining Significance: Noise, Section 4.1-A(ii). However, the County's *Report Format and Content Requirements – Noise*, Section 2.3, includes a statement that a “doubling of sound energy” is

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considered a significant impact at a “documented noisy site” (County of San Diego 2009b). A doubling of sound energy is equivalent to a 3-dBA increase. Based on the County’s Noise Compatibility Guidelines (Table N-1) and related Noise Standards (Table N-2) in the County’s General Plan Noise Element, a documented noisy site is a location with NSLU that currently exceeds 60 dBA CNEL in the case of single-family residences, 65 dBA CNEL in the case of multifamily or mixed-use residences, or 70 dBA in the case of office/professional uses.

Thus, a substantial increase is defined as a 10-dBA increase, or greater, over existing noise levels when existing and future noise levels are below the County’s General Plan Noise Compatibility Guidelines and Noise Standards, or a 3-dBA increase when existing or future noise levels equal or exceed the County’s General Plan Compatibility Guidelines and Noise Standards.

### **Cumulative Noise Impact Criteria**

Based on the guidance contained in the County’s *Report Format and Content Requirements – Noise* (County of San Diego 2009b):

Cumulative noise impacts may occur in discretionary applications where other permitted or planned projects will combine to exceed the standards of the Noise Element. It is more likely to occur in locations where existing noise levels are elevated or approach the applicable criterion of 60 dBA CNEL for an exterior noise sensitive land use (NSLU).

Further:

Mitigation measures are required to reduce potential ‘Cumulatively Considerable’ impacts. Evaluation of mitigation feasibility and limitations shall be addressed in association with their implementation. A ‘cumulatively considerable’ contribution requiring mitigation or design measures is identified whenever ... more than a one decibel increase from the project was identified in the model analysis.

By inference, “more than a one decibel increase” implies a 2-dBA or greater increase (when comparing Existing plus Cumulative versus Existing plus Cumulative plus Project).

### **City of Chula Vista**

Based upon the City’s noise guidelines and ordinance, the Proposed Project would result in a significant noise impact if it would result in the exposure of any on- or off-site, existing, or reasonably foreseeable future NSLU within the City of Chula Vista corporate boundaries to exterior land use-noise compatibility guidelines as outlined in Table 10 or exterior/interior noise outlined in Tables 11 and 12.

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## 6 ANALYSIS OF PROJECT EFFECTS AND POTENTIAL NOISE IMPACTS

### 6.1 On-Site Traffic Noise

In the future, vehicular traffic on Proctor Valley Road is anticipated to be the primary noise source that would affect the Project Area. Using TNM, the Future (Year 2030) plus Project traffic noise levels were modeled for locations representative of the exterior living areas (i.e., future rear yards, side yards, patios) of the parcels along Proctor Valley Road. The modeled on-site receiver locations are shown in Figure 6.

The results of the noise modeling conducted for the proposed on-site NSLUs under the Future plus Project scenarios are shown in Table 15. The TNM sound modeling input/output data are included in Appendix B.

**Table 15**  
**Modeled On-Site Ground-Floor Traffic Noise Levels (dBA CNEL)**

Receiver	Land Use	County of San Diego Exterior Noise Standard	Future (Year 2030) plus Proposed Project <sup>a</sup>	County of San Diego Noise Standard <sup>b</sup> Exceeded?
R19 P-1	Park	65	62	No
R20 R-4 southwest side	Single-family residential	60	69	Yes
R21 R-4 west side	Single-family residential	60	69	Yes
R22 R-4 northwest side	Single-family residential	60	69	Yes
R23 R-5 Lot 10 southwest side	Single-family residential	60	66	Yes
R24 R-5 Lot 5 west side	Single-family residential	60	68	Yes
R25 R-5 PPP-1 northwest side	Park	65	62	No
R26 R-12 south side	Park	65	63	No
R27 southwest side	School	65	61	No
R28 R-12 north side	Park	65	63	No
R29 S-1 west side	School	65	63	No
R30 S-1 northwest side	School	65	62	No
R31 P-2	Park	65	62	No
R32 MU-1	Mixed-Use	65	64	No
R33 R-10 Lot 6	Single-family residential	60	67	Yes
R34 R-10 Lot 4	Single-family residential	60	67	Yes
R35 R-10 Lot 2	Single-family residential	60	67	Yes
R36 R-11 PP-4	Park	65	61	No
R37 R-11 Lot 54	Single-family residential	60	66	Yes
R38 R-11 Lot 58	Single-family residential	60	66	Yes

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**Table 15**  
**Modeled On-Site Ground-Floor Traffic Noise Levels (dBA CNEL)**

Receiver	Land Use	County of San Diego Exterior Noise Standard	Future (Year 2030) plus Proposed Project <sup>a</sup>	County of San Diego Noise Standard <sup>b</sup> Exceeded?
R39 R-11 Lot 61	Single-family residential	60	66	Yes
R40 R-11 Lot 1	Single-family residential	60	65	Yes
R41 R-11 Lot 4	Single-family residential	60	64	Yes
R42 R-11 Lot 6	Single-family residential	60	59	No
R43 R-11 Lot 8	Single-family residential	60	53	No
R44 R-14 Lot 64	Single-family residential	60	59	No
R45 R-14 Lot 28	Single-family residential	60	63	Yes
R46 R-14	Open space	65	55	No
R47 R-14 Lot 27	Single-family residential	60	68	Yes
R48 R-14 Lot 2	Single-family residential	60	67	Yes
R49 R-14 Lot 1	Single-family residential	60	67	Yes
R50 R-14 P-4	Park	65	63	No
R51 R-13 Lot 1	Single-family residential	60	66	Yes
R52 R-13 Lot 9	Single-family residential	60	65	Yes
R53 R-13 Lot 8	Single-family residential	60	62	Yes
R54 R-13 Lot 10	Single-family residential	60	66	Yes
R55 R-13 Lot 11	Single-family residential	60	67	Yes
R56 R-13 Lot 12	Single-family residential	60	66	Yes

dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level

<sup>a</sup> On-site traffic noise analysis uses year 2030 with full GDP/SRP build-out traffic conditions.

<sup>b</sup> 60 dBA CNEL for single-family residential, 65 dBA CNEL for mixed-use, open space, parks, and schools.

The traffic noise modeling results indicate that Future plus Project traffic noise levels would exceed the County's exterior noise standard of 60 dBA CNEL at many of the outdoor residential living areas, unless mitigation is provided. Noise levels at the proposed school site, parks and the mixed-use area would not exceed the County's 65 dBA CBEL noise standard. For the residences found to be in excess of the 60-dBA CNEL noise standard, mitigation measures were analyzed in the form of solid noise barriers, using the TNM v 2.5 traffic noise model. The results of the noise modeling with 6-foot-high noise barriers is shown in Table 16. The locations of the proposed noise barriers is shown in Figure 7, Soundwall Locations. As shown in Table 16, with 6-foot-high noise barriers located at the property boundaries fronting along Proctor Valley Road, all residential use land uses would be in conformance with County of San Diego transportation noise standards. The details of the required noise barriers are included in Section 11.2, Mitigation Measures.

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**Table 16**  
**Modeled On-Site Ground-Floor Traffic Noise Levels (dBA CNEL) with Noise Barriers**

Receiver	Land Use Type	County of San Diego Exterior Noise Standard	Future (Year 2030) plus Proposed Project <sup>a</sup> without Mitigation	County of San Diego Noise Standard <sup>b</sup> Exceeded?	Future (Year 2030) plus Proposed Project with Mitigation (6-foot high noise barriers)	County of San Diego Noise Standard <sup>b</sup> Exceeded with Mitigation?
R19 P-1	Park	65	62	No	N/A	No
R20 R-4 southwest side	Single-family residential	60	69	Yes	58	No
R21 R-4 west side	Single-family residential	60	69	Yes	58	No
R22 R-4 northwest side	Single-family residential	60	69	Yes	58	No
R23 R-5 Lot 10 southwest side	Single-family residential	60	66	Yes	55	No
R24 R-5 Lot 5 west side	Single-family residential	60	68	Yes	58	No
R25 R-5 PPP-1 northwest side	Park	65	62	No	N/A	No
R26 R-12 south side	Park	65	63	No	N/A	No
R27 southwest side	School	65	61	No	N/A	No
R28 R-12 north side	Park	65	63	No	N/A	No
R29 S-1 west side	School	65	63	No	N/A	No
R30 S-1 northwest side	School	65	62	No	N/A	No
R31 P-2	Park	65	62	No	N/A	No
R32 MU-1	Mixed-use	65	64	No	N/A	No
R33 R-10 Lot 6	Single-family residential	60	67	Yes	58	No
R34 R-10 Lot 4	Single-family residential	60	67	Yes	57	No
R35 R-10 Lot 2	Single-family residential	60	67	Yes	57	No
R36 R-11 PP-4	Park	65	61	No	N/A	No
R37 R-11 Lot 54	Single-family residential	60	66	Yes	56	No
R38 R-11 Lot 58	Single-family residential	60	66	Yes	59	No

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**Table 16**  
**Modeled On-Site Ground-Floor Traffic Noise Levels (dBA CNEL) with Noise Barriers**

Receiver	Land Use Type	County of San Diego Exterior Noise Standard	Future (Year 2030) plus Proposed Project <sup>a</sup> without Mitigation	County of San Diego Noise Standard <sup>b</sup> Exceeded?	Future (Year 2030) plus Proposed Project with Mitigation (6-foot high noise barriers)	County of San Diego Noise Standard <sup>b</sup> Exceeded with Mitigation?
R39 R-11 Lot 61	Single-family residential	60	66	Yes	57	No
R40 R-11 Lot 1	Single-family residential	60	65	Yes	56	No
R41 R-11 Lot 4	Single-family residential	60	64	Yes	58	No
R42 R-11 Lot 6	Single-family residential	60	59	No	N/A	No
R43 R-11 Lot 8	Single-family residential	60	53	No	N/A	No
R44 R-14 Lot 64	Single-family residential	60	59	No	N/A	No
R45 R-14 Lot 28	Single-family residential	60	63	Yes	55	No
R46 R-14	Open Space	65	55	No	N/A	No
R47 R-14 Lot 27	Single-family residential	60	68	Yes	58	No
R48 R-14 Lot 2	Single-family residential	60	67	Yes	55	No
R49 R-14 Lot 1	Single-family residential	60	67	Yes	58	No
R50 R-14 P-4	Park	65	63	No	N/A	No
R51 R-13 Lot 1	Single-family residential	60	66	Yes	55	No
R52 R-13 Lot 9	Single-family residential	60	65	Yes	54	No
R53 R-13 Lot 8	Single-family residential	60	62	Yes	52	No
R54 R-13 Lot 10	Single-family residential	60	66	Yes	55	No
R55 R-13 Lot 11	Single-family residential	60	67	Yes	57	No
R56 R-13 Lot 12	Single-family residential	60	66	Yes	60	No

N/A = not applicable; no mitigation required at this location; dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level

<sup>a</sup> On-site traffic noise analysis uses year 2030 with full GDP/SRP build-out traffic conditions.

<sup>b</sup> 60 dBA CNEL for single-family residential, 65 dBA CNEL for mixed-use, open space, parks, and schools.

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The noise levels at second-floor level façades<sup>4</sup> of the proposed residences facing Proctor Valley Road are shown in Table 17. As shown, noise levels would exceed the County of San Diego's exterior noise standard at 22 of the 27 modeled representative second-floor level second-floor level receivers in the Future plus Project scenario, resulting in a **potentially significant** traffic noise impact. Noise mitigation is provided in Section 11, Project Design Features and Mitigation Measures.

**Table 17**  
**Modeled On-Site Second-Floor Traffic Noise Levels**

Receiver (Second-Floor Level)	Land Use Type	County of San Diego CNEL Exterior Noise Standard (dBA)	Future (Year 2030) plus Project <sup>a</sup>	County of San Diego Noise Standard <sup>b</sup> Exceeded?
R20 R-4 southwest Side 2nd Floor	Single-family residential	60	69	No
R21 R-4 west Side 2nd Floor	Single-family residential	60	69	Yes
R22 R-4 northwest Side 2nd Floor	Single-family residential	60	69	Yes
R23 R-5 Lot 10 southwest Side 2nd Floor	Single-family residential	60	67	Yes
R24 R-5 Lot 5 west Side 2nd Floor	Single-family residential	60	68	Yes
R32 MU-1 2nd Floor	Mixed-Use	65	64	No
R33 R-10 Lot 6 2nd Floor	Single-family residential	60	67	Yes
R34 R-10 Lot 4 2nd Floor	Single-family residential	60	67	Yes
R35 R-10 Lot 2 2nd Floor	Single-family residential	60	67	Yes
R37 R-11 Lot 54 2nd Floor	Single-family residential	60	66	Yes
R38 R-11 Lot 58 2nd Floor	Single-family residential	60	66	Yes
R39 R-11 Lot 61 2nd Floor	Single-family residential	60	66	Yes
R40 R-11 Lot 1 2nd Floor	Single-family residential	60	65	Yes
R41 R-11 Lot 4 2nd Floor	Single-family residential	60	64	Yes

<sup>4</sup> It is not known at this time which of the residential lots would have second floors and/or second-floor balconies facing Proctor Valley Road; second-floor noise exposures were conservatively assumed for all of the modeled on-site receiver locations.

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**Table 17**  
**Modeled On-Site Second-Floor Traffic Noise Levels**

Receiver (Second-Floor Level)	Land Use Type	County of San Diego CNEL Exterior Noise Standard (dBA)	Future (Year 2030) plus Project <sup>a</sup>	County of San Diego Noise Standard <sup>b</sup> Exceeded?
R42 R-11 Lot 6 2nd Floor	Single-family residential	60	60	No
R43 R-11 Lot 8 2nd Floor	Single-family residential	60	55	No
R44 R-14 Lot 64 2nd Floor	Single-family residential	60	60	No
R45 R-14 Lot 28 2nd Floor	Single-family residential	60	67	Yes
R47 R-14 Lot 27 2nd Floor	Single-family residential	60	68	Yes
R48 R-14 Lot 2 2nd Floor	Single-family residential	60	67	Yes
R49 R-14 Lot 1 2nd Floor	Single-family residential	60	67	Yes
R51 R-13 Lot 1 2nd Floor	Single-family residential	60	65	Yes
R52 R-13 Lot 9 2nd Floor	Single-family residential	60	65	Yes
R53 R-13 Lot 8 2nd Floor	Single-family residential	60	64	Yes
R54 R-13 Lot 10 2nd Floor	Single-family residential	60	66	Yes
R55 R-13 Lot 11 2nd Floor	Single-family residential	60	66	Yes
R56 R-13 Lot 12 2nd Floor	Single-family residential	60	66	Yes

dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level

<sup>a</sup> On-Site traffic noise analysis uses year 2030 with full GDP/SRP build-out traffic conditions.

<sup>b</sup> 60 dBA CNEL for single-family residential, 65 dBA CNEL for multifamily residential.

The County requires that interior noise levels not exceed a CNEL of 45 dB. Typically, with the windows open, building shells provide approximately 15 dB of noise reduction. The exterior second-floor noise levels would range from 55 to 69 dB CNEL at proposed residential lots, which implies that interior noise levels at second-floor elevations would range from approximately 40 to 54 dB CNEL. Therefore, without mitigation the interior noise level in some cases for habitable spaces would exceed the County's 45 dB CNEL interior noise criterion, resulting in a **potentially significant impact**. Noise mitigation is provided in Section 11.



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## 6.2 Off-Site Traffic Noise

The Proposed Project would result in additional vehicle trips on adjoining roadways, which potentially could result in significant noise increases. As discussed in Section 4.4.3, Noise Calculations, the Existing, Existing plus Project, Future (Year 2030 Cumulative Conditions) and Future (Year 2030 Cumulative Conditions) plus Project<sup>5</sup> traffic noise levels were modeled using TNM for representative NSLUs adjacent to roadways with a potential for a significant noise increase. The results of the noise modeling conducted for off-site NSLUs are shown in Table 18. The TNM sound modeling input/output data is included in Appendix B.

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<sup>5</sup> Please note that as stated previously, the traffic volumes for the Year 2030 (without full GDP/SRP build-out) Cumulative Conditions are used for the assessment of off-site traffic noise impacts.

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**Table 18**  
**Modeled Off-Site Traffic Noise Levels**

Receiver: Location	Applicable Exterior Noise Standard (dBA CNEL)	Modeled Exterior Noise Levels (dBA CNEL)									Significant Cumulative Impact (Noise Standard Exceedance or Substantial Increase)?
		Existing	Existing plus Proposed Project	Increase from Propose d Project	Noise Standard Exceedance as a Result of Proposed Project?	Significant Impact (Noise Standard Exceedance or Substantial Increase)?	Future (Year 2030 Cumulativ e Condition s)	Future (Year 2030 Cumulative Conditions) plus Proposed Project	Increas e from Propos ed Project	Noise Standard Exceedance as a Result of Proposed Project?	
R1: San Miguel Ranch Road; west of SR-125	65 (City of Chula Vista)	64	65	1	No	No	66	67	1	No	No
R2: Mt. Miguel Road; Proctor Valley Road – San Miguel Ranch Road	65 (City of Chula Vista)	54	54	0	No	No	54	55	1	No	No
R3: Proctor Valley Road; SR125 – Mt. Miguel Road	65 (City of Chula Vista)	55	56	1	No	No	55	56	1	No	No
R4: Proctor Valley Road; Mt. Miguel Road – Lane Avenue	65 (City of Chula Vista)	59	60	1	No	No	61	62	1	No	No
R5: Lane Avenue; Proctor Valley Road – Otay Lakes Road	65 (City of Chula Vista)	54	55	1	No	No	55	56	1	No	No

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**Table 18**  
**Modeled Off-Site Traffic Noise Levels**

Receiver: Location	Applicable Exterior Noise Standard (dBA CNEL)	Modeled Exterior Noise Levels (dBA CNEL)									Significant Cumulative Impact (Noise Standard Exceedance or Substantial Increase)?
		Existing	Existing plus Proposed Project	Increase from Proposed Project	Noise Standard Exceedance as a Result of Proposed Project?	Significant Impact (Noise Standard Exceedance or Substantial Increase)?	Future (Year 2030 Cumulative Conditions)	Future (Year 2030 Cumulative Conditions) plus Proposed Project	Increase from Proposed Project	Noise Standard Exceedance as a Result of Proposed Project?	
R6: Proctor Valley Road; Lane Avenue – Hunte Parkway	65 (City of Chula Vista)	55	57	2	No	No	57	58	1	No	No
R7: Hunte Parkway; Proctor Valley Road – Otay Lakes Road	65 (City of Chula Vista)	52	54	2	No	No	54	55	1	No	No
R8: Hunte Parkway; Otay Lakes Road – Olympic Parkway	65 (City of Chula Vista)	57	58	1	No	No	59	60	1	No	No
R9: Hunte Parkway; Olympic Parkway – Eastlake Parkway	65 (City of Chula Vista)	47	48	1	No	No	59	59	0	No	No

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**Table 18**  
**Modeled Off-Site Traffic Noise Levels**

Receiver: Location	Applicable Exterior Noise Standard (dBA CNEL)	Modeled Exterior Noise Levels (dBA CNEL)									Significant Cumulative Impact (Noise Standard Exceedance or Substantial Increase)?
		Existing	Existing plus Proposed Project	Increase from Proposed Project	Noise Standard Exceedance as a Result of Proposed Project?	Significant Impact (Noise Standard Exceedance or Substantial Increase)?	Future (Year 2030 Cumulative Conditions)	Future (Year 2030 Cumulative Conditions) plus Proposed Project	Increase from Proposed Project	Noise Standard Exceedance as a Result of Proposed Project?	
R10: Proctor Valley Road; Hunte Parkway – Northwoods Drive	65 (City of Chula Vista)	50	54	4	No	No	53	56	3	No	No
R11: Northwoods Drive; Proctor Valley Road – Blue Ridge Drive	65 (City of Chula Vista)	50	52	2	No	No	48	52	4	No	No
M4 / R12: Proctor Valley Road west of Northwoods Drive	65 (City of Chula Vista)	51	56	5	No	No	55	57	2	No	No
M6 / R13: San Miguel Ranch Road east of SR-125	65 (City of Chula Vista)	59	60	1	No	No	61	61	0	No	No
M8 / R14: Proctor Valley Road north of	60 (County of San Diego)	39	51	12	No	Yes (Substantial Increase)	60	61	1	Yes	No (less than 2 dB increase)

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**Table 18**  
**Modeled Off-Site Traffic Noise Levels**

Receiver: Location	Applicable Exterior Noise Standard (dBA CNEL)	Modeled Exterior Noise Levels (dBA CNEL)									Significant Cumulative Impact (Noise Standard Exceedance or Substantial Increase)?
		Existing	Existing plus Proposed Project	Increase from Propose d Project	Noise Standard Exceedance as a Result of Proposed Project?	Significant Impact (Noise Standard Exceedance or Substantial Increase)?	Future (Year 2030 Cumulativ e Condition s)	Future (Year 2030 Cumulative Conditions) plus Proposed Project	Increas e from Propos ed Project	Noise Standard Exceedance as a Result of Proposed Project?	
Proposed Project											
M9 / R15: Proctor Valley Road; Melody Road – Schlee Canyon Road	60 (County of San Diego)	49	50	1	No	No	55	55	0	No	No
M10 / R16: Melody Road; Proctor Valley Road – SR-94	60 (County of San Diego)	48	51	3	No	No	60	60	0	No	No
M11 / R17: Proctor Valley Road; Schlee Canyon Road – Maxfield Road	60 (County of San Diego)	57	58	1	No	No	61	61	0	No	No
R18: Proctor Valley Road; Maxfield Road to SR-94	60 (County of San Diego)	59	60	1	No	No	63	63	0	No	No

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As shown on Table 18, the off-site traffic noise modeling results indicate that Existing plus Project traffic noise levels would range from approximately 48 dB CNEL at R9 to approximately 65 dB CNEL at R1. Future plus Project noise levels would range from approximately 52 dB CNEL at R11 to 67 dB CNEL at R1.

Noise level increases as a result of the Proposed Project are also shown in Table 18. The increase in noise levels as a result of the Proposed Project for the most part ranges from 0 to 5 dB; however, in one instance, at a location within the County (M8/R14, a cluster of several rural residential properties located on the north side of Proctor Valley Road, north of the Proposed Project and west of Melody Road), the Existing plus Project scenario would be 12 dB higher than the existing scenario. The noise level at this location would increase from 39 dB CNEL in the existing condition to 51 dB CNEL in the Existing plus Project condition. The 12 dB increase in the Existing plus Project scenario versus the existing scenario is due to the fact that Proctor Valley Road currently carries very low traffic volumes. The baseline for a Proposed Project is normally the condition that exists when the Notice of Preparation is published; therefore, the unimproved, low-traffic volume Proctor Valley Road is considered as the existing roadway condition in this analysis.

It should also be noted that in comparing the Future (Year 2030) traffic noise level at M8/R14 with the Future (Year 2030) plus Project traffic noise level, the modeled noise level would be 60 dB CNEL in Year 2030 and 61 dB CNEL in the Year 2030 plus Project. The incremental increase resulting from the Proposed Project at this location would be only 1 dB (Proctor Valley Road would be improved by 2030), and in the context of community noise, 1 dB is not an audible change. Nonetheless, the Proposed Project would result in a 12 dB increase in the Existing plus Project Scenario, which is a **potentially significant impact**.

Modeled receivers R1 through R13 are located in the City of Chula Vista, which has an exterior noise standard of 65 dB CNEL (City of Chula Vista 2005). The Proposed Project would not cause any of the receivers located in the City of Chula Vista to exceed the City of Chula Vista noise standard of 65 dB CNEL.

Receivers R14 through R18 are located in the County of San Diego, which has an exterior noise standard for single-family residences of 60 dB CNEL. As previously stated, one of the receivers (R8/M14) would exceed the County of San Diego noise standard of 60 dB CNEL with implementation of the Proposed Project; however, the noise level increase due to the addition of Project traffic would be 1 dB, and, therefore, the Project's impact would not be a "cumulatively considerable contribution."

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The potential for traffic noise impacts to vehicles using the proposed connection to Whispering Meadows Lane (to Melody Road) was also considered. Based on information from the traffic impacts analysis, because of the resulting circuitous route that would be required for residents within the Village 14 and a larger majority of Planning Area 16 of the project to access the connection, a total of seven project-related vehicle trips in the AM peak hour and nine trips in the PM peak hour are anticipated to utilize the Whispering Meadows connection on a typical day. Such a low volume of vehicles would not alter the hourly or daily levels of traffic noise on Whispering Meadows Lane, particularly given the low vehicle speeds associated with this roadway type.

Based upon analysis of the County's Guidelines for Determining Significance, the Proposed Project would result in a **potentially significant impact** in the form of a substantial noise increase (+12 dB) at residential receiver M8/R14, located north of the Proposed Project along Proctor Valley Road and west of Melody Road. Potential mitigation measures are discussed in Section 11.

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## 7 OPERATIONAL ACTIVITIES

Noise thresholds for operational activities are regulated through the County's Noise Ordinance, (County of San Diego 2011b) "Noise Abatement and Control." Section 36.404 includes sound level limits for non-construction-related stationary noise sources (i.e., 1-hour average sound level limits for the Proposed Project's operational-related noise sources) such as mechanical equipment (e.g., pumps and HVAC equipment), operation-related traffic (e.g., vehicle movement, engine noise), speakers, bells, chimes, and outdoor human activity in defined limited areas.

The allowable noise limits depend upon the zoning district and time of day. The 1-hour average sound level limits for residential zoned areas with a density of 11 or less dwelling units per acre is 50 dB from 7 a.m. to 10 p.m., and 45 dB from 10 p.m. to 7 a.m.<sup>6</sup> If the measured ambient noise level exceeds the applicable limit previously noted, the allowable 1-hour average noise levels shall be the ambient noise level. Operational noise sources would include a potential elementary school, neighborhood parks, and private recreational facilities and operation of HVAC units at single-family homes. Relative to the elementary school site, neighborhood parks and private recreational facilities, these uses would be subject to compliance with the County Noise Ordinance. Therefore, through compliance with the County Noise Ordinance, impacts would be less than significant.

Relative to the air-conditioning units at each of the single-family, the Proposed Project is still in its preliminary design stages, and the specific HVAC units and configurations are not yet known. Noise levels from HVAC equipment can vary substantially depending on unit efficiency, size, and location but generally range from 50 to 65 dBA  $L_{eq}$  at a distance of 50 feet (City of Santa Ana 2010). Assuming a typical attenuation rate of 6 dB per doubling of distance for point-source type noise sources, noise levels attributed to unshielded HVAC mechanical systems could exceed the County of San Diego daytime property line noise limit for residential land uses (50 dBA  $L_{eq}$ ) within 250 feet of the source. In addition, sources within 450 feet of an NSLU property line could exceed the County's nighttime noise limit (i.e., 45 dBA  $L_{eq}$ ) for stationary source noise. As a result, the impact of noise from HVAC equipment under the Proposed Project would be **potentially significant**. Potential mitigation measures are discussed in Section 11.

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<sup>6</sup> Based on Table 1, Site Utilization Plan – Land Use Summary, this is the appropriate standard.

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## 8 CONSTRUCTION ACTIVITIES

Noise thresholds for construction noise are regulated through the County's Noise Ordinance, Chapter 4, Noise Abatement and Control. Section 36.409 in this ordinance sets limits on the time of day and days of the week that construction can occur as well as setting noise limits for construction activities. The ordinance prohibits operating construction equipment at the following times:

- Mondays through Saturdays except between 7 a.m. and 7 p.m.
- Sundays, and days appointed by the president, governor, or Board of Supervisors for a public fast, Thanksgiving, or holiday.

In addition, the Noise Ordinance requires that no equipment shall be operated so as to cause an 8-hour average construction noise level in excess of 75 dB between 7 a.m. and 7 p.m. when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

### 8.1 Construction Noise

Construction noise and vibration are temporary phenomena. Construction noise and vibration levels will vary from hour to hour and day to day, depending on the equipment in use, the operations being performed, and the distance between the source and receptor.

The Proposed Project's construction activities would include the following:

- **Site Preparation.** Noise sources could include crawler tractors, loaders, and a grinder.
- **Grading.** Noise sources could include such equipment as crawler tractors, excavators, graders, loaders and backhoes, drill rigs, water trucks, and off-highway trucks.
- **Building Construction.** Noise sources could include cranes, forklifts, tractors, loaders, backhoes, and generator sets.
- **Trenching (Utilities).** Noise sources could include excavators, tractors, loaders, backhoes, and water trucks.
- **Architectural Coatings.** Noise sources could include air compressors.
- **Paving.** Noise sources could include pavers, paving equipment (i.e., oilers, sweepers), loaders, water trucks, rollers, and scrapers.
- **Brush Maintenance / Landscaping.** Noise sources could include loaders, dump trucks, water trucks, rollers, and trenchers.

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To assess the potential noise effects of construction activities, this noise analysis used data from an extensive field study of various types of industrial and commercial construction projects (EPA 1971). Noise levels associated with various construction phases, assuming all pertinent equipment is present and operating at a reference distance of 50 feet, are shown in Table 19. Because of vehicle technology improvements and stricter noise regulations since the field study was published in 1971, these levels likely are overstated. Nonetheless, this analysis conservatively uses the average noise levels shown in Table 19 for the loudest construction phase. This information indicates that the overall (hourly) average noise level generated on a construction site could be 89 dBA at a distance of 50 feet during excavation and finishing phases. The noise levels presented are value ranges; the magnitude of construction noise emission typically varies over time because construction activity is intermittent and the power demands on construction equipment (and the resulting noise output) are cyclical. Typically, a 12-hour  $L_{eq}$  would be lower than an hourly  $L_{eq}$ .

Construction may also involve blasting to break up bedrock close to the ground surface. Typically, most of the noise generated by blasting is very low in frequency—below the frequency range audible to humans. The use of impulsive noise equipment and construction activities that would result in impulse noise (e.g., pile driving or explosives blasting) is discussed in Section 9, Potential Impulsive Noise Impacts.

Noise levels generated by construction equipment (or by any point source) decrease at a rate of approximately 6 dBA per doubling of distance from the source (Harris 1979). As the loudest construction activities associated with on-site construction of the Proposed Project would be during excavation and grading, as well as finishing (approximately 89 dBA at 50 feet), the on-site construction noise would be approximately 83 dBA at 100 feet, 77 dBA at 200 feet, 71 dBA at 400 feet, and so on. Intervening structures that block the line of sight, such as buildings, would further decrease the resultant noise level by a minimum of 5 dBA. The effects of molecular air absorption and anomalous excess attenuation would further reduce the noise level from construction activities at more distant locations at the rates of 0.7 dBA and 1 dBA per 1,000 feet, respectively.

**Table 19**  
**Typical Noise Levels from Construction Activities for Large Construction Projects**

Construction Activity	Average Sound Level at 50 feet (dBA $L_{eq}$ )*	Standard Deviation (dB)
Ground clearing	84	7
Excavation/grading	89	6
Foundations	78	3
Erection	87	6
Finishing	89	7

Source: EPA 1971.

\* Sound level with all pertinent equipment operating.

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## 8.2 Construction Noise Impact to Off-Site Residences

The Proposed Project has the potential to result in short-term noise impacts at off-site residential NSLUs as a result of the construction of off-site improvements to Proctor Valley Road as well as development of Otay Ranch Village 14.

### 8.2.1 Proctor Valley Road Improvements

As part of the Proposed Project, the currently unimproved Proctor Valley Road would be improved approximately from east of Northwoods Drive/Agua Vista Drive in Chula Vista to Echo Valley Road in Jamul. Additional infrastructure would be included within the Proctor Valley Road easement, including a sewer, water and dry utility extension, a sewer pump station, and the Proctor Valley Regional Pathway. The nearest existing NSLUs with respect to the Proctor Valley Road improvements are several single-family residences located along Proctor Valley Road near Echo Valley Road in Jamul, approximately 60 feet away from the northern extent of roadway improvements. Additionally, existing single-family residences are located approximately 140 feet away from the westerly extent of proposed off-site Proctor Valley Road improvements, adjacent to Proctor Valley Road at Northwoods Drive/Agua Vista Drive in the City of Chula Vista.

The nearest existing NSLUs are shown in Figure 8. Construction of the Proctor Valley Road improvements would result in noise levels as high as 87 dBA  $L_{eq}$  at the nearest existing residences 60 feet away, and as high as 80 dBA  $L_{eq}$  at the next-nearest existing residences 140 feet away. Because construction work is cyclical in nature, the 8-hour average noise levels would be lower. Nonetheless, construction associated with the Proposed Project would likely result in exceedances of the County's 75 dBA  $L_{eq(8-hr)}$  noise standard at the nearest existing NSLUs in Jamul (unincorporated San Diego County); therefore, this would be a **potentially significant impact**. Potential mitigation measures are discussed in Section 11.

At the nearest existing residences in Chula Vista, the City of Chula Vista does not have a construction noise level threshold; however, noise from construction operations would be high relative to existing ambient noise levels and would constitute a temporary substantial noise increase. Therefore, this would be a **potentially significant impact**. Potential mitigation measures are discussed in Section 11.

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The nearest existing NSLUs to the Project Area are single-family residences located near the southwest boundary of Jamul, located as near as 60 feet to the north, and single-family residences approximately 2,900 feet to the west of the Project Area (in the Bella Lago

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community of Chula Vista as shown on Figure 8). Proposed Project construction would result in noise levels as high as approximately 87 dBA  $L_{eq}$  at the nearest existing residences 60 feet away and approximately 49 dBA  $L_{eq}$  at the next-nearest set of existing residences 3,100 feet away. Because construction work is cyclical in nature, the 8-hour average noise levels would be lower. Nonetheless, construction associated with the Proposed Project would likely result in exceedances of the County's 75 dBA  $L_{eq(8-hr)}$  noise standard at the nearest existing NSLUs in Jamul (unincorporated San Diego County); therefore, this would be a **potentially significant impact**. Potential mitigation measures are discussed in Section 11.

At the nearest existing residences in Chula Vista, the City of Chula Vista does not have a construction noise level threshold; moreover, noise from construction operations would be relatively low compared to existing ambient noise levels. Therefore, this would be a **less-than-significant impact**.

### 8.3 Construction Noise Impact to Adjacent On-Site Residences

Because the development of the Proposed Project would be a multi-year endeavor, portions of the development would be completed and occupied during the construction of subsequent portions (phases). Therefore, the occupied Proposed Project phases have the potential to be impacted by noise from ongoing construction activities. Location-specific phasing schedules are not available at this time; it is therefore possible that construction of a new phase of the Proposed Project could take place as near as 50 feet of an occupied phase. In such an instance, short-term noise levels as high as 89 dBA  $L_{eq}$  could result. Because construction work is cyclical in nature, the 8-hour average noise levels would be lower. Nonetheless, construction associated with the Proposed Project could result in exceedances of the County's 75-dBA  $L_{eq(8-hr)}$  noise standard; therefore, this would be a **potentially significant impact**. Potential mitigation measures are discussed in Section 11.

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### 9 POTENTIAL IMPULSIVE NOISE IMPACTS

Impulsive noise sources associated with construction activities could include rock drilling and blasting. Pile driving is not anticipated to be necessary as part of this Proposed Project.

It is preliminarily estimated that approximately 5,354,227 cubic yards of rock would be blasted during the early stages of excavation and mass grading for Phase 1 (January 2018–December 2024) of the Proposed Project, and that approximately 1,778,632 cubic yards of rock would be blasted during the early stages of excavation and mass grading for Phase 2 (December 2020–November 2027) (TM 5616).

Blasting (and the associated drilling that precedes blasting) would be limited to the hours between 7 a.m. and 7 p.m. (County of San Diego 2011b). Based upon preliminary estimates (Hunsaker and Associates Inc. 2017), potential areas where rock blasting may be necessary are located within approximately 140 feet of existing noise- and vibration-sensitive land uses (in this case, residences located to the north of the Project Area). The next-closest area where rock blasting may be necessary are residences located approximately 1,100 feet west of the Project Area. Construction blasting generates a maximum noise level of approximately 94 dB at a distance of 50 feet (FHWA 2006). This source noise level is used in this analysis because it provides a reasonable estimate of the construction blasting noise level. However, the noise level would vary depending on various factors, as more fully described in the following text. The blast is generally perceived as a dull thud rather than as a loud explosion.

**U.S. Bureau of Mines:** The United States Bureau of Mines has provided an impact guide in the area of structural and human response to vibration (USBM 1980). The criteria are well accepted for all types of ground vibration and are based on the peak particle velocity (PPV) of the receiving structure. The potential for damage to residential structures is greater with low-frequency blast vibration (below 40 Hertz (Hz)) than with high-frequency blast vibration (40 Hz and above). For low-frequency blast vibration (below 40 Hz), a vibration limit of 0.75 inches per second for modern drywall construction and 0.50 inches per second for older plaster-on-lath construction is proposed. For high frequencies (above 40 Hz), a limit of 2 inches per second for all types of construction is proposed.

The United States Bureau of Mines also published a document regarding recommendations for maximum safe air overpressure levels for blasting (USBM 1980). This document, “Structure Response and Damage Produced by Airblast from Surface Mining,” recommends a maximum safe air overpressure of 134 dB (linear) for residential structures. The first occurrence of airblast damage is usually the breakage of poorly mounted windows at approximately 152 dB (linear) (Caltrans 2004). The response and annoyance problem from airblast is probably primarily caused by wall and window rattling and the resulting secondary noises. Although these effects would

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not entirely be precluded by the recommended levels, the recommended levels are considered low enough to preclude damage to residential structures, but they may not address the annoyance of individuals.

**County of San Diego Blasting Permit:** Prior to all blasting activities, a blasting permit would be required to be obtained from the County as defined in Section 96.1.202 in the County Code of Regulatory Ordinances, which would ensure that all blasting is conducted according to County Code and minimizes adverse effects to safety. The permit is issued in accordance with the California Health and Safety Code requirements. As part of the permit conditions, pre-blast notifications to all residences and businesses within 600 feet of the blast site, pre-blast structure survey inspections for structures within 300 feet, pre-blast inspection reports, seismograph monitoring of the nearest structure within 600 feet, and post-blast inspections are required.

Blasting involves drilling a series of boreholes and placing explosives in each hole. By limiting the amount of explosives in each hole, the blasting contractor can limit the fraction of the total energy released at any single time, which in turn can reduce noise and vibration levels. Rock drilling generates impulsive noise from the striking of the hammer with the anvil within the drill body, which drives the drill bit into the rock. Rock drilling generates noise levels of approximately 80 to 98 dB  $L_{max}$  at a distance of 50 feet. Given a typical work cycle, this would equate to 78 dBA  $L_{eq}$  at 50 feet. Assuming a noise level of 98 dBA  $L_{max}$  at 50 feet, the noise level from rock drilling would be less than the County noise standard for impulsive noise at a distance of approximately 350 feet.

When explosive charges detonate in rock, almost all of the available energy from the explosion is used in breaking and displacing the rock mass. However, some blast energy escapes into the atmosphere as a sequence of airborne sound waves, a phenomenon known as “air-blast overpressure.” These sound waves are very low frequency, below the audible range. Very high air-blast overpressure levels can rattle or in some cases break windows. However, air-blast overpressure rarely reaches levels that could cause building damage with modern blasting practices. Specific locations where blasting may be necessary is not known at this time. In addition, other details such as blast-charge weights are not known at this time; thus, air-blast overpressures cannot be reliably predicted. However, based upon a preliminary estimate of the nearest potential areas where rock blasting may be necessary as being within approximately 140 feet of existing residences, a maximum noise level of up to 89 dBA  $L_{max}$  from the rock drilling and up to 85 dBA  $L_{max}$  from the blasting could occur. These levels would exceed County’s threshold of significance for impulsive sounds at residential land uses of 82 dBA  $L_{max}$ . Therefore, impacts associated with blasting would be **potentially significant**. Mitigation measures are discussed in Section 11.



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### Portable Rock-Crushing/Processing Facility

A portable rock-crushing/processing facility would be used on site during construction activities. Typically, rock-crushing operation would begin with a front-end loader picking up material and dumping the material into a primary crusher. The material would then be crushed, screened, and stacked in product piles. The material would be stockpiled adjacent to the rock-crushing equipment. All material would be used on site. Electric power would most likely be provided by a diesel engine generator. Based on noise measurements that have been conducted for portable rock crushing operations, the rock crushing activity would generate a 1-hour average noise level of approximately 80 dBA at a distance of 100 feet from the primary crusher. The primary crusher would also generate impulsive noise events. Maximum noise levels associated with the primary crusher could reach approximately 88 dBA at 100 feet.

The closest existing off-site residence property line or NSLU could be located within approximately 140 feet of the proposed rock crushing. At this distance, the noise level (both 8-hour average and impulsive noise) associated with the rock crushing activities would be approximately 77 dBA  $L_{eq}$  and approximately 85 dBA  $L_{max}$ . These noise levels would exceed County 8-hour construction noise and impulsive noise thresholds and, therefore, would be **potentially significant**. At a distance of 250 feet, the average noise level from a typical rock crushing operation would be reduced to below County 8-hour construction noise and impulsive noise thresholds. Where possible, rock-crushing equipment should be located further than 250 feet to minimize annoyance to nearby NSLU. Mitigation measures are discussed in Section 11.2.

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## 10 GROUNDBORNE VIBRATION AND NOISE IMPACTS

### 10.1 Guidelines for the Determination of Significance

Based upon the County's Guidelines for Determining Significance: Noise (County of San Diego 2009a), the Proposed Project would result in a significant noise impact if Proposed Project implementation could expose the land use types listed in Tables 20 and 21 to groundborne vibration and noise levels equal to or greater than the levels shown.

**Table 20**  
**Guidelines For Determining the Significance of Groundborne Vibration and Noise Impacts**

Land Use Category	Groundborne Vibration Impact Levels (inches/second RMS)		Groundborne Noise Impact Levels (dB re 20 micropascals)	
	<i>Frequent Events<sup>a</sup></i>	<i>Occasional or Infrequent Events<sup>b</sup></i>	<i>Frequent Events<sup>a</sup></i>	<i>Occasional or Infrequent Events<sup>b</sup></i>
Category 1: Buildings where low ambient vibration is essential for interior operations (research and manufacturing facilities with special vibration constraints) <sup>f</sup>	0.0018 <sup>c</sup>	0.0018 <sup>c</sup>	Not applicable <sup>d, e</sup>	Not applicable <sup>d, e</sup>
Category 2: Residences and buildings where people normally sleep (hotels, hospitals, residences, and other sleeping facilities) <sup>f</sup>	0.0040	0.010	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use (schools, churches, libraries, other institutions, and quiet offices) <sup>f</sup>	0.0056	0.014	40 dBA	48 dBA

**Source:** FTA 2006.

RMS = root mean square; re = relative

<sup>a</sup> "Frequent events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.

<sup>b</sup> "Infrequent events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.

<sup>c</sup> This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

<sup>d</sup> Vibration-sensitive equipment is not sensitive to groundborne noise.

<sup>e</sup> There are some buildings, such as concert halls, TV and recording studios, and theaters that can be very sensitive to vibration and noise but do not fit into any of the three categories. Table 24 gives criteria for acceptable levels of groundborne vibration and noise for these various types of special uses.

<sup>f</sup> For Categories 2 and 3 with occupied facilities, isolated events such as blasting are significant when the PPV exceeds 1 inch per second. Non-transportation vibration sources such as impact pile drivers or hydraulic breakers are significant when their PPV exceeds 0.1 inches per second. More specific criteria for structures and potential annoyance were developed by Caltrans (2004) and will be used to evaluate these continuous or transient sources in the County.

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**Table 21**  
**Guidelines for Determining the Significance of Groundborne Vibration and Noise Impacts for Special Buildings**

Type of Building or Room	Groundborne Vibration Impact Levels (inches/second RMS)		Groundborne Noise Impact Levels (dB re 20 micropascals)	
	<i>Frequent Event<sup>a</sup></i>	<i>Occasional or Infrequent Event<sup>b</sup></i>	<i>Frequent Events<sup>a</sup></i>	<i>Occasional or Infrequent Events<sup>b</sup></i>
Concert halls, TV studios, and recording studios	0.0018	0.0018	25 dBA	25 dBA
Auditoriums	0.0040	0.010	30 dBA	38 dBA
Theaters	0.0040	0.010	35 dBA	43 dBA

**Source:** FTA 2006.

RMS = root mean square; re = relative

<sup>a</sup> "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.

<sup>b</sup> "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.

As stated in Note "f" of Table 20, Caltrans criteria shall be used for pile drivers and transient sources such as those associated with Proposed Project construction. As previously noted, pile driving is not anticipated for this Proposed Project. For the purposes of this vibration analysis, impacts from general construction would occur if vibration levels exceed 0.0040 inches per second RMS (County of San Diego 2009a).

## 10.2 Potential Groundborne Vibration and Noise Impacts

### 10.2.1 Operations

No operational components of the Proposed Project include significant groundborne noise or vibration sources, and no significant vibrations sources currently exist, or are planned, in the Project Area. Thus, no significant groundborne noise or vibration impacts would occur with the operation of the Proposed Project.

### 10.2.2 Construction

In general, on-site construction equipment that would cause the most groundborne vibration and noise would be associated with site grading and pile driving for foundations. For this project, no pile driving is anticipated. Groundborne vibration associated with blasting is anticipated, and is addressed separately below. During grading, the largest groundborne vibration levels are anticipated to be generated by large bulldozers and loaded trucks used for earthmoving. According to the FTA, vibration levels associated with the use of bulldozers range from approximately 0.003 to 0.089 inches per second PPV and 58 to 87 vibration decibels (VdB) at 25

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feet, as shown in Table 22. Additionally, loaded trucks used for soil hauling during grading could generate vibration levels of approximately 0.076 inches per second PPV and noise levels of 86 VdB at 25 feet. According to the FTA's methodology for determining vibration propagation, vibration levels would exceed County-recommended Caltrans thresholds for residences of 0.004 PPV inches per second RMS within 190 feet of large bulldozers and 170 feet of loaded trucks.

**Table 22**  
**Typical Construction Equipment Vibration Levels**

Equipment	PPV at 25 feet (inches per second)	Approximate Noise Level at 25 Feet <sup>*</sup>
Vibratory roller	0.210	94
Jackhammer	0.035	79
Large bulldozer	0.089	87
Loaded trucks	0.076	86
Small bulldozer	0.003	58

Sources: FTA 2006; Caltrans 2013.

PPV = peak particle velocity

<sup>\*</sup> Where noise level is the velocity level in decibels (VdB) referenced to 1 microinch per second and based on the RMS velocity amplitude.

The nearest sensitive receptors to Proposed Project construction activities that could produce high vibration levels would be at the same residences to the north and west of off-site Proctor Valley Road improvements in Jamul and the City of Chula Vista, identified as part of the construction noise impact assessment (see Section 8.2.1), located approximately 60 feet and 140 feet away, respectively. Therefore, at a distance of 60 feet and greater, vibration levels are anticipated to exceed 0.004 inches per second RMS or 0.1 inches per second PPV from grading activities at the nearest off-site residences. This impact would be **potentially significant**.

Because the development of the Proposed Project would be a multi-year endeavor, portions of the development would be completed and occupied during the construction of subsequent portions (phases). Therefore, the occupied Proposed Project phases have the potential to be impacted by vibration from ongoing construction activities. Location-specific phasing schedules are not available at this time; it is therefore possible that construction of a new phase of the Proposed Project could take place as near as 50 feet of an occupied phase. In such an instance, short-term vibration levels as high as 0.03 inches per second RMS could result. Therefore, vibration levels may exceed 0.004 inches per second RMS from grading activities on and off site at the nearest residence. This impact would be **potentially significant**. Mitigation measures are discussed in Section 11.

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### Blasting

Due to the geologic character of the project Proposed Area, blasting and/or on-site rock breaking is anticipated during site preparation activities for the Proposed Project. Thus, construction-related blasting activities may result in significant groundborne vibrations or groundborne noise impacts. At the current stage of the project design, a blasting study has not been completed, and no specific blasting timelines or blast numbers are available. However, it is anticipated (based upon prior projects) that blasting is expected to occur at 2- to 3-day intervals with no more than one blast per day. Preliminary blasting location identification (Hunsaker and Associates Inc. 2017) indicates that blasting could take place within approximately 140 feet of existing residences.

As previously discussed in Section 9, when explosive charges detonate in rock, almost all of the available energy from the explosion is used in breaking and displacing the rock mass. However, a small portion of the energy is released in the form of vibration waves that radiate away from the charge location. The strength, or amplitude, of the waves reduces as the distance from the charge increases. The rate of amplitude decay depends on local geological conditions but can be estimated with a reasonable degree of consistency, which allows regulatory agencies to control blasting operations by means of relationships between distance and explosive quantity.

The explosive charges used in mining and mass grading are typically wholly contained in the ground. However, because the exact blasting locations, necessary geotechnical data or blasting and materials handling plans are not known at this time, it is not possible to conduct a groundborne vibration analysis assessing the proposed blasting and materials handling associated with the Proposed Project. Therefore, for purposes of this analysis, impacts would be **potentially significant**. Mitigation measures are discussed in Section 11.

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## 11 PROJECT DESIGN FEATURES AND MITIGATION MEASURES

### 11.1 Project Design Features

No project design features are incorporated into the Proposed Project.

### 11.2 Mitigation Measures

The following mitigation measures are required to address the identified potentially significant noise impacts.

Due to the conflicts with the proposed land uses and predicted future vehicular noise levels from Proctor Valley Road, the following mitigation measures would be required to reduce potential traffic noise impacts to a **less-than-significant** level, and ensure the Proposed Project complies with the County's noise standards:

#### Exterior Residential Noise Levels

**M-N-1** The single-family residential lots shown in Figure 7 with rear- or side-yard exposures adjacent to Proctor Valley Road shall include minimum 6-foot-high solid noise barriers along the exposure. The noise barriers may be constructed as a wall, berm, or a combination of both. The materials used in the construction of the barrier are required to have a minimum surface density of 4 pounds per square foot. They may consist of masonry material, 0.625-inch thick Plexiglas, 0.25-inch thick plate glass, or a combination of these materials. The barriers must be designed so there are no openings or cracks.

#### Interior Residential Noise Levels

**M-N-2** Prior to issuance of building permits (and after preparation of detailed building plans) for all proposed single-family residential units directly adjacent to Proctor Valley Road as shown in Figure 7, the building permit applicant shall demonstrate that interior noise levels due to exterior noise sources would not exceed the applicable County noise ordinance standard of 45 dBA CNEL for the subject land use. In addition to the installation of sound walls that will be constructed under M-N-1, it is anticipated that compliance with the applicable standard would be achieved by structure setbacks, acoustically rated windows and doors, or air conditioning or equivalent forced air circulation to allow occupancy with closed windows, which, for most construction, would provide sufficient exterior-to-interior noise reduction. An acoustical study shall be prepared to demonstrate and

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verify that interior noise levels will be below 45 CNEL within all habitable residential rooms.

**Implementation:** Proposed Project applicant, or its designee, and primary contractor(s) of all Proposed Project phases for the single-family residential units directly adjacent to Proctor Valley Road.

**Timing:** A Noise Restriction Easement will be dedicated to the Final Map to include the following requirement: Prior to issuance of building permits for development of on-site single-family residential units directly adjacent to Proctor Valley Road, after detailed building plans are available and model numbers/types have been sited on a precise grading plan.

**Enforcement:** The County of San Diego will be responsible for enforcement.

### Off-Site Noise Impacts

As previously discussed, in comparing Existing and Existing plus Project noise levels, the Proposed Project would result in a substantial increase in noise levels (from 39 dBA CNEL in the Existing scenario to 51 dBA CNEL in the Existing plus Project scenario) at existing off-site residences located adjacent to Proctor Valley Road north of the Proposed Project and west of Melody Road (as represented by receiver M8/R14). Although the resulting noise level would be an acceptable 51 dBA CNEL, the increase would exceed 10 dBA, thereby resulting in a significant impact. The affected roadway segment and adjacent residences are shown in Figure 9, Off-Site Noise Impacts – M8/R14.

Several methods are available to reduce traffic noise such as noise barriers, road surface improvements, regulatory measures (e.g., lower speed limits), and traffic calming devices (e.g., speed bumps). However, none of these measures are considered feasible.

For example, constructing noise barriers (e.g., sound walls) on private property at M8/R14 and surrounding residences would require permission of the property owner and raise potential liability and maintenance concerns. Additionally, to be most effective noise barriers would need to be continuous; however, due to the need for driveways and other access points, the continuity of the barrier and its effectiveness would be limited.

Measures such as reduced speed limits or traffic calming devices would require legal or government enforcement and may have undesirable or unacceptable impacts in other areas such as speed bumps lengthening emergency response calls.



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For these reasons, mitigation of off-site impacts from noise level increases along Proctor Valley Road north of the Proposed Project and West of Melody Road is considered infeasible, and the Proposed Project, therefore, would have a **significant and unavoidable direct impact**. As previously explained, it is important to note that identification of the significant impact is based on the Existing plus Project scenario and the increase in noise levels over existing levels (i.e., an increase greater than 10 dBA CNEL (See Table 18, Receiver Location M8/R14.)) The resulting Existing plus Project noise level under this scenario would be 51 CNEL, which is within the County's compatibility criteria.

### On-Site Stationary Source Noise Impacts

**M-N-3** Prior to the issuance of any building permit for stationary noise-generating equipment such as HVAC systems, the applicant, or its designee, shall prepare an acoustical study(s) of the proposed stationary noise sources associated with the HVAC systems, for submittal to the County for review and approval. Best engineering practices shall be implemented, and the placement of noise-generating equipment and shielding shall be considered when installing stationary noise sources associated with HVAC systems. The acoustical study shall identify all noise-generating equipment and predict noise levels from all identified equipment at the applicable property lines. Where predicted noise levels would exceed those levels deemed acceptable as established by the County's Noise Ordinance, Section 36.404, the acoustical study shall identify mitigation measures shown to effectively reduce noise levels (e.g., enclosures, barriers, and site orientation) to be implemented to comply with Section 36.404. Such mitigation measures shall be implemented by the applicant, or its designee, prior to issuance of any building permit.

**Implementation:** This mitigation measure will be implemented by the applicant(s), or its designee, and primary contractor(s) of all Proposed Project phases.

**Timing:** This mitigation measure will be carried out prior to issuance of building permits.

**Enforcement:** The County will be responsible for enforcement.

### Construction Noise Impacts

Construction activities have the potential to generate short-term noise levels greater than 75 dBA  $L_{eq(8-hr)}$  at existing NSLU near off-site Proctor Valley Road improvements (Section 8.2.1) and at

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future on-site receivers adjacent to subsequent construction. The following mitigation measures will be implemented and will be included as notes to the grading plan.

- M-N-4** The Proposed Project applicant, or its designee, shall take those steps necessary to ensure that all construction equipment shall be properly maintained and equipped with noise-reduction intake, exhaust mufflers, and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.
- M-N-5** The Proposed Project applicant, or its designee, shall take those steps necessary to ensure that whenever feasible, electrical power shall be used to run air compressors and similar power tools.
- M-N-6** The Proposed Project applicant, or its designee, shall take those steps necessary to ensure that all equipment staging areas shall be located as far as feasible from occupied residences or schools.
- M-N-7** The Proposed Project applicant, or its designee, shall take those steps necessary to ensure that all construction activity on and off the Proposed Area, noise attenuation techniques shall be employed, as needed, to ensure that noise levels remain below 75 dBA  $L_{eq}$  at existing noise sensitive land uses. Such techniques shall include, but are not limited to, the use of sound blankets on noise-generating equipment and the construction of temporary sound barriers adjacent to construction sites between affected uses in order to achieve noise levels below 75 dBA  $L_{eq}$ .

**Implementation:** Applicant(s), or its designee, and primary contractor(s) of all Proposed Project phases involving construction.

**Timing:** Prior to and during Proposed Project-related construction.

**Enforcement:** The County of San Diego shall be responsible for enforcement.

### **Impulsive Noise Impacts (Blasting and Rock Crushing)**

- M-N-8** Prior to approval of the grading permit for any portion of the Proposed Project, the applicant, or its designee, shall direct that the designated contractor shall prepare a blasting and monitoring plan with an estimate of noise and vibration levels of each blast at noise sensitive land uses (NSLU) within 1,000 feet of each blast. Where potential exceedance of the County of San Diego Noise Ordinance or the City of Chula Vista's Noise Control Ordinance is identified, the blast drilling and monitoring plan shall identify mitigation measures shown to

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effectively reduce noise and vibration levels (e.g., altering orientation of blast progression, increased delay between charge detonations, presplitting) to be implemented to comply with the noise level limits of the County of San Diego's (County) Noise Ordinance, Sections 36.409 and 36.410, and the Chula Vista Noise Ordinance, Chapter 19.68, the vibration-level limits of 1 inch per second peak particle velocity. Such measures shall be implemented by the Proposed Project applicant, or its designee, prior to the issuance of the grading permit. Additionally, all Proposed Project phases involving blasting shall conform to the following requirements:

- All blasts shall be performed by a blast contractor and blasting personnel licensed to operate in the County.
- Each blast shall be monitored and recorded with an air-blast overpressure monitor and groundborne vibration accelerometer that is located outside the closest residence to the blast and is approved by the County. Blasting shall not exceed 0.1 inches per second peak particle velocity at the nearest occupied residence, in accordance with County of San Diego's Noise Guidelines, Section 4.3.

**Implementation:** Applicant(s), or its designee, and primary contractor(s) of all Proposed Project phases involving blasting.

**Timing:** Prior to and during Proposed Project-related blasting activities.

**Enforcement:** The County will be responsible for enforcement.

**M-N-9** Prior to approval of the grading permit for any portion of the Proposed Project, the applicant, or its designee, shall take those steps necessary to ensure that on-site rock crusher facilities are located a minimum of 250 feet from the property line of occupied residences or other noise-sensitive uses.

**Implementation:** Applicant(s), or its designee, and primary contractor(s) of all Proposed Project phases involving rock crushing.

**Timing:** Prior to and during Proposed Project-related rock crushing activities.

**Enforcement:** The County of San Diego will be responsible for enforcement.

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### On-Site Vibration Impacts

**M-N-10** Prior to beginning construction of any Proposed Project component within 300 feet of an existing or future occupied residence, the Proposed Project applicant, or its designee, shall require preparation of a vibration monitoring plan for submittal to the County of San Diego (County) noise control officer for review and approval. At a minimum, the vibration monitoring plan shall require data be sent to the County noise control officer or designee on a weekly basis or more frequently as determined by the noise control officer. The data shall include vibration level measurements taken during the previous work period. In the event that the County noise control officer determines there is reasonable probability that future measured vibration levels would exceed allowable limits, the County noise control officer or designee shall take the steps necessary to ensure that future vibration levels do not exceed such limits, including suspending further construction activities that would result in excessive vibration levels until either alternative equipment or alternative construction procedures can be used that generate vibration levels that do not exceed 0.004 inches per second RMS or 0.1 inches per second PPV at the nearest residential structure. Construction activities not associated with vibration generation could continue.

The vibration monitoring plan shall be prepared and administered by a County-approved noise consultant. In addition to the data described previously, the vibration monitoring plan shall also include the location of vibration monitors, the vibration instrumentation used, a data acquisition and retention plan, and exceedance notification and reporting procedures. A description of these plan components is provided in the following text.

**Location of Vibration Monitors:** The vibration monitoring plan shall include a scaled plan indicating monitoring locations, including the location of measurements to be taken at construction site boundaries and at nearby residential properties.

**Vibration Instrumentation:** Vibration monitors shall be capable of measuring maximum unweighted RMS and PPV levels triaxially (in three directions) over a frequency range of 1 to 100 Hz. The vibration monitor shall be set to automatically record daily events during working hours and to record peak triaxial PPV values in 5-minute interval histogram plots. The method of coupling the geophones to the ground shall be described and included in the report. The vibration monitors shall be calibrated within 1 year of the measurement, and a certified laboratory conformance report shall be included in the report.

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**Data Acquisition:** The information to be provided in the data reports shall include, at a minimum, daily histogram plots of PPV versus time of day for three triaxial directions, and maximum peak vector sum PPV and maximum frequency for each direction. The reports shall also identify the construction equipment operation during the monitoring period and their locations and distances to all vibration measurement locations.

**Exceedance Notification and Reporting Procedures:** A description of the notification of exceedance and reporting procedures shall be included, and the follow-up procedures taken to reduce vibration levels to below the allowable limits.

**Implementation:** The applicant(s), or its designee, and primary contractor(s) of all project phases involving the use of heavy construction equipment within 300 feet of existing or future occupied residence.

**Timing:** Prior to and during construction activities.

**Enforcement:** The County will be responsible for enforcement.

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## 12 SUMMARY OF PROPOSED PROJECT IMPACTS, MITIGATION, AND CONCLUSION

### Vehicle Noise Impacts

Existing and future Proctor Valley Road vehicle noise levels at all identified outdoor living areas of the Proposed Project residential units would comply with the County's 60 CNEL exterior noise criterion, provided that the proposed Mitigation Measure M-N-1 (construction of 6-foot-high, solid walls at residential units adjacent to Proctor Valley Road) (see Figure 7 for locations). Thus, vehicle noise impacts to on-site residences would be **less than significant**.

The noise level at the second-floor level of proposed single-family residences directly adjacent to Proctor Valley Road could exceed 60 dB CNEL. Thus, without mitigation, the interior noise level could exceed the County's 45 dB CNEL interior noise criterion. Prior to issuance of building permits, an interior noise study will be required for the residences adjacent to Proctor Valley Road to ensure that the interior CNEL would not exceed 45 dB (mitigation measure M-N-2). The residences would most likely require air-conditioning and/or mechanical ventilation systems to meet the County's interior noise standard. Sound-rated windows may also be required. Thus, impacts would be **less than significant with mitigation incorporated**.

Proposed Project-related traffic noise impacts at existing off-site NSLU would be less than significant, with the exception of one location (R8/M14). At residences located along Proctor Valley Road north of the Proposed Project and west of Melody Road, a significant increase in traffic noise (+12 dB) along this roadway segment would occur compared to existing traffic noise levels, because Proctor Valley Road currently experiences very low traffic volumes. Because there is no feasible mitigation for this exceedance, this impact would be **significant and unavoidable**.

### On-Site Operational Noise

Noise from on-site operational activities would be potentially significant impacts. Mitigation measures to reduce potential impacts to a level below significance are provided.

The Proposed Project's operational noise sources would include air-conditioning units at each of the proposed residential units. Noise from HVAC equipment at the Proposed Project would be a potentially significant impact. Mitigation measure M-N-3 is provided to reduce potential impacts to **less than significant**.

No operational components of the Proposed Project include significant groundborne noise or vibration sources, and no significant vibrations sources currently exist, or are planned, in the Project Area. Thus, no significant groundborne noise or vibration impacts would occur with the operation of the Proposed Project.

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### Construction Noise and Vibration Impact

Construction noise associated with improvements of Proctor Valley Road, as well as on-site construction noise at adjacent, occupied residences, would be potentially significant impacts. Mitigation measures M-N-4 through M-N-7 are provided to reduce potential impacts to **less than significant**.

Noise from blasting activities associated with the excavation and mass-grading phase of the Proposed Project would be potentially significant, and mitigation measure M-N-8 is provided to reduce potential impacts to **less than significant**.

Noise from rock crushing activities associated with the excavation and mass-grading phase of the Proposed Project would be potentially significant, and mitigation measure M-N-9 is provided to reduce potential impacts to less than significant.

Based on the anticipated construction equipment and distance from the equipment to the proposed homes, construction activities would result in vibration anticipated to be below the level of human perception at existing off-site noise/vibration sensitive land uses. Thus, construction vibration would not disturb the off-site residences and the potential vibration impacts to these residential structures are **less than significant**.

Because the development of the Proposed Project would be a multi-year endeavor, portions of the development would be completed and occupied during the construction of subsequent portions (phases). Vibration from construction activities, if they occur within 300 feet of on-site residences, has the potential to result in vibration levels exceeding County standards. This would be potentially significant, and mitigation measure M-N-10 is provided to reduce potential impacts to less than significant.

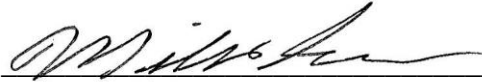


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### 13 CERTIFICATION

This report has been prepared by Mike Greene, who is on the County of San Diego approved Acoustical Consultant list.



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Mike Greene, INCE Bd. Cert.  
Acoustician

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